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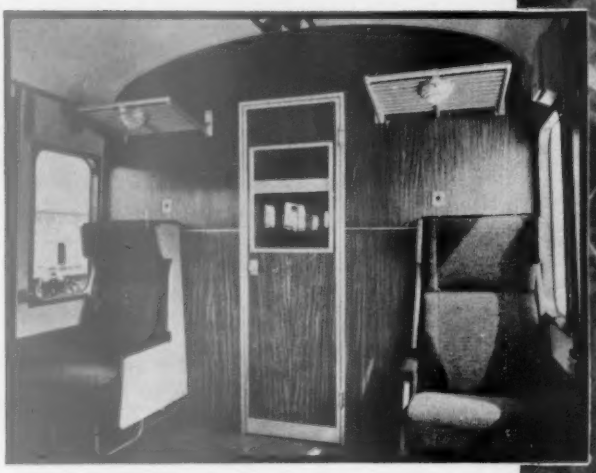

Belfort Afrormosia used for panelling in the new Railway Coaches. Photograph reproduced by permission of London Midland Region, British Railways.

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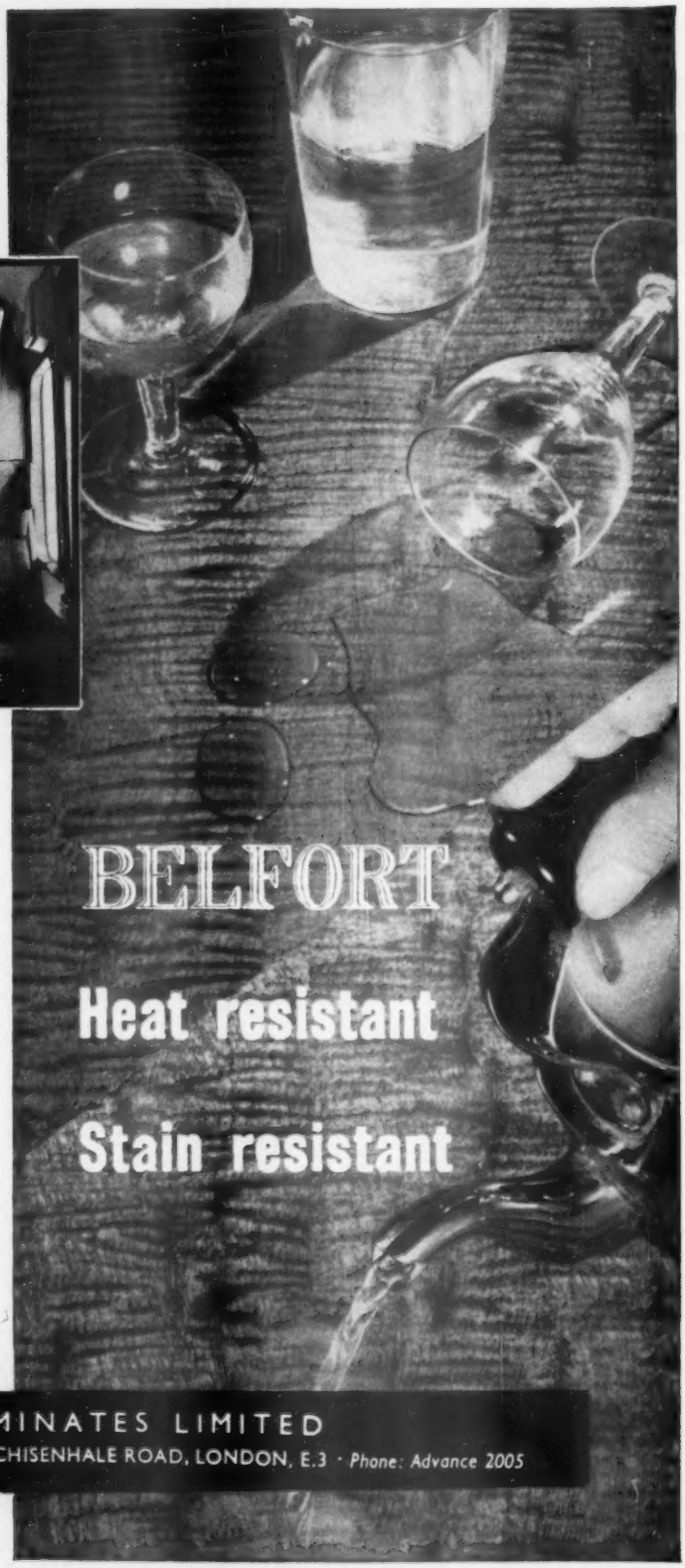

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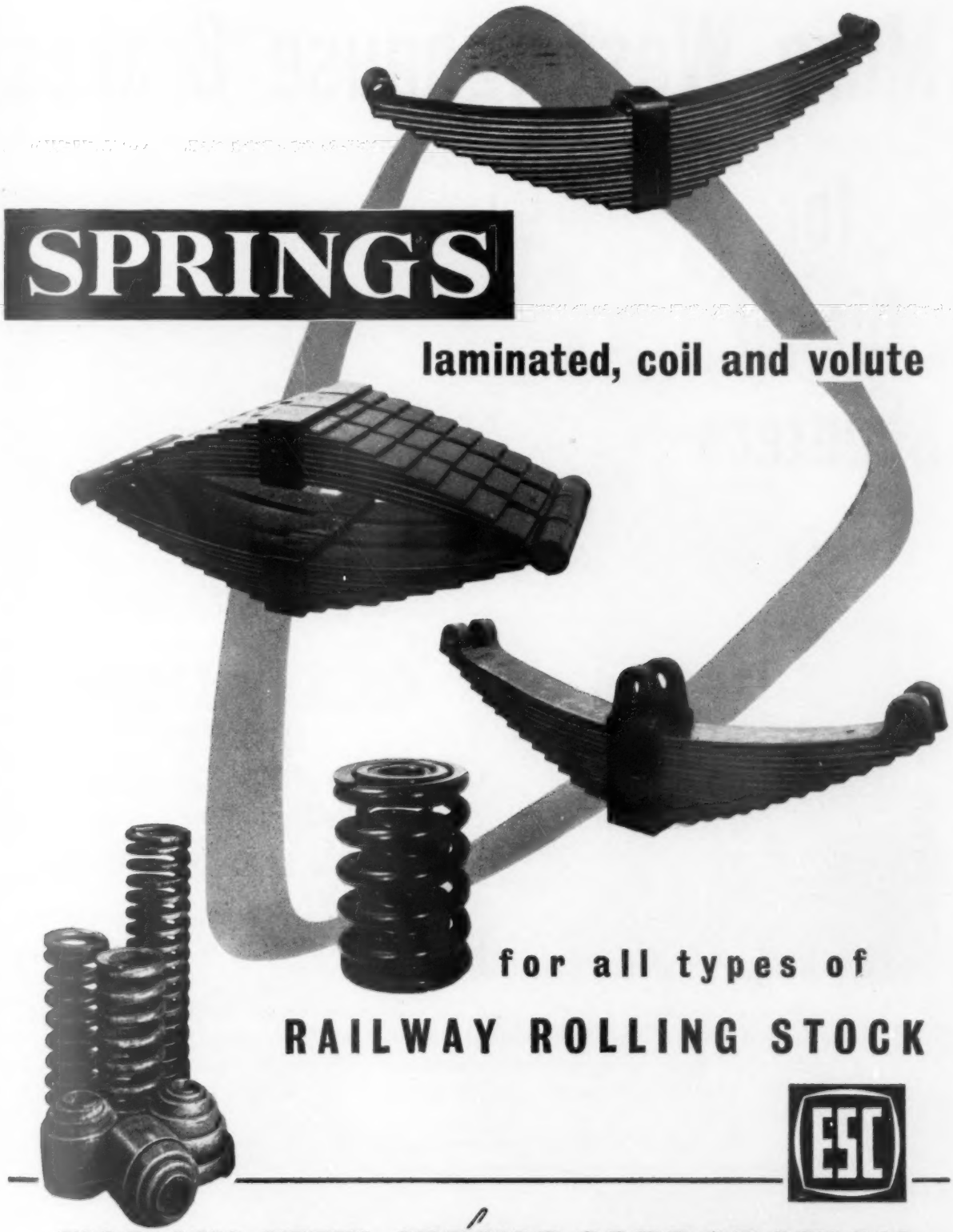

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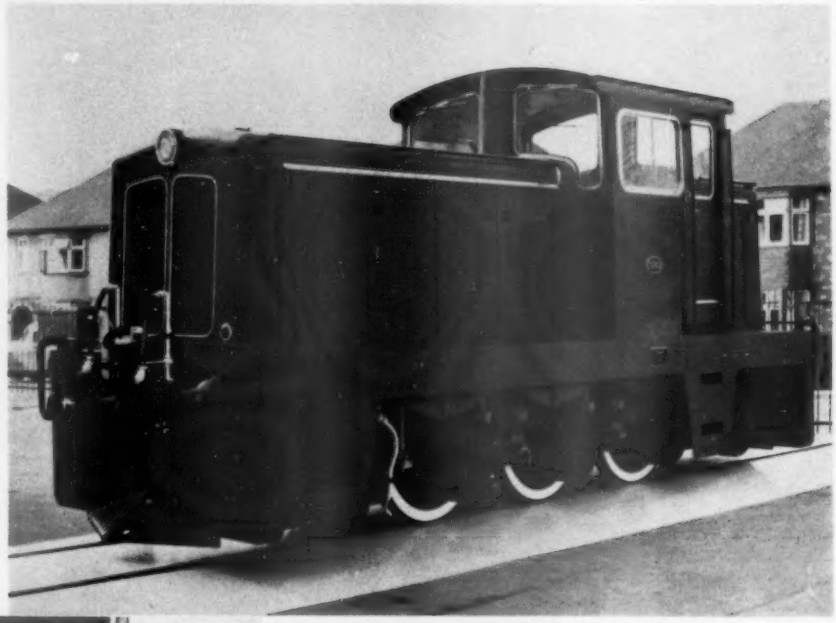

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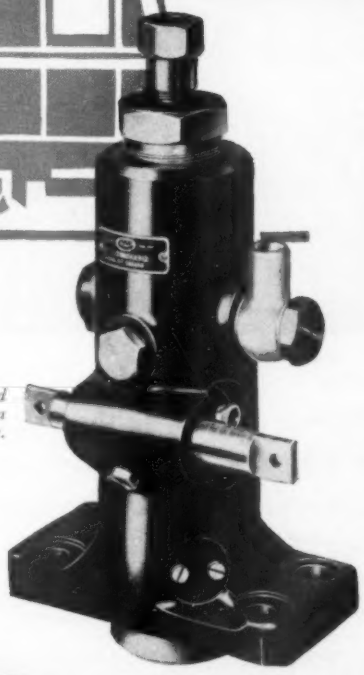
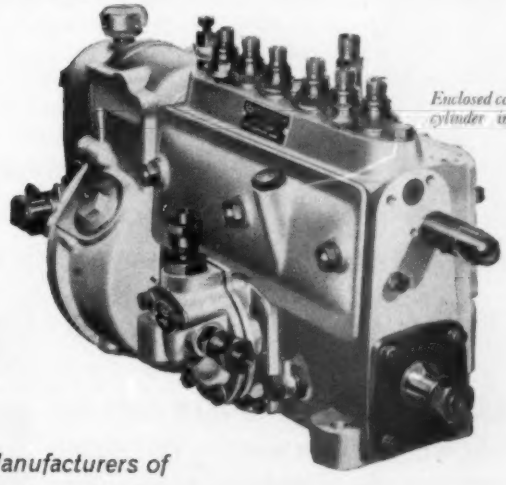


Single flange mounted injection pump for a main line locomotive.



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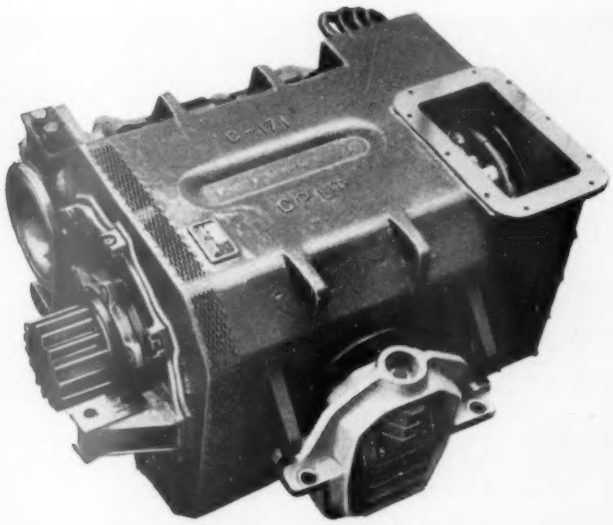
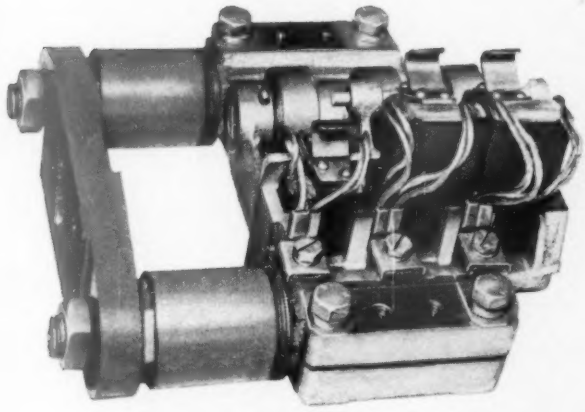


Engineers use the word performance in two senses, a limited one which refers to parameters that can be specified and checked; and a wider, vaguer, but essentially more realistic sense which covers freedom from trouble, ease of servicing, adaptability and many other things. Performance in the first sense is reproducible by any competent manufacturer; it depends on designing to well established principles. Performance in the second sense is the basis of choice between manufacturers. It comes from countless small differences in design that are based on know-how or experience.

This thing called know-how



Look at this brush-box from a traction motor; an ordinary enough piece of equipment but nevertheless embodying a great deal of experience. Note for example the very heavy insulators made from an unshatterable, non-tracking synthetic material vastly superior to porcelain. Note how the spring can be disengaged so that the brushes are easily slipped out for inspection and that the pressure on each brush can be adjusted separately. Where, owing to the design of the locomotive, there is no access to the top of the motor, the brushgear is mounted on a ring, normally clamped and dowelled in position but, when released, capable of being racked round by a gear engaging teeth in its periphery to bring each set of brushes in turn to the position from which they can be most easily reached. It is on details of this kind that performance in service depends.

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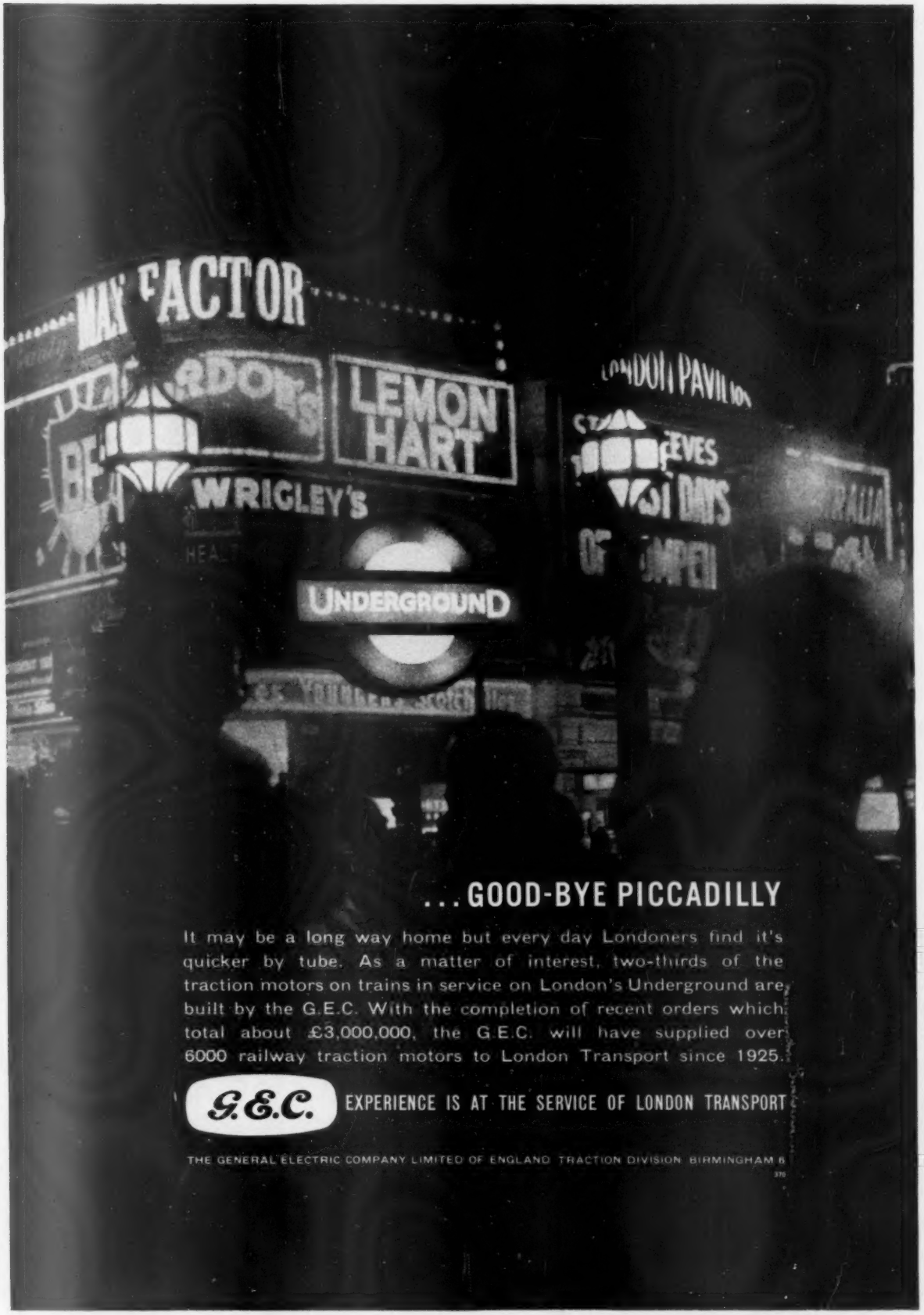

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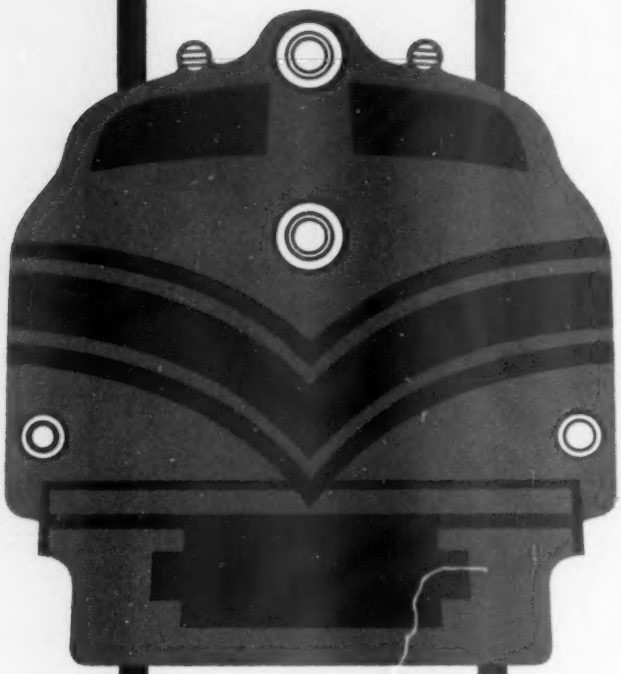

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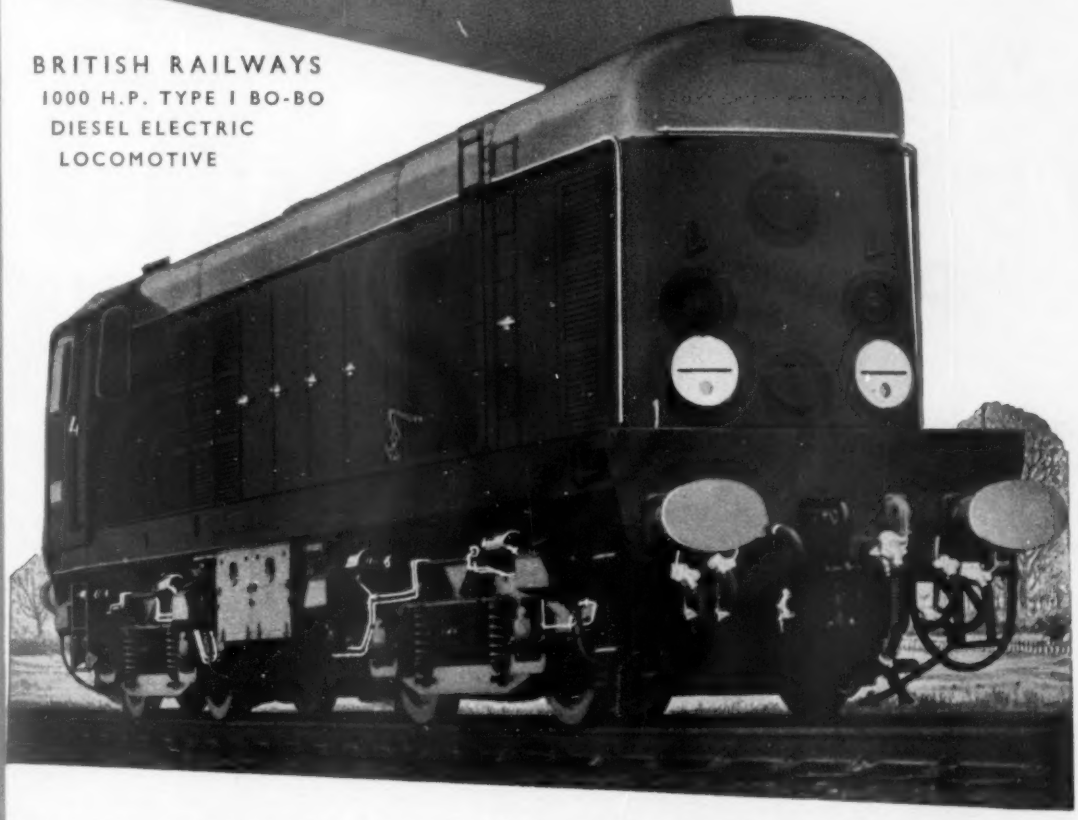

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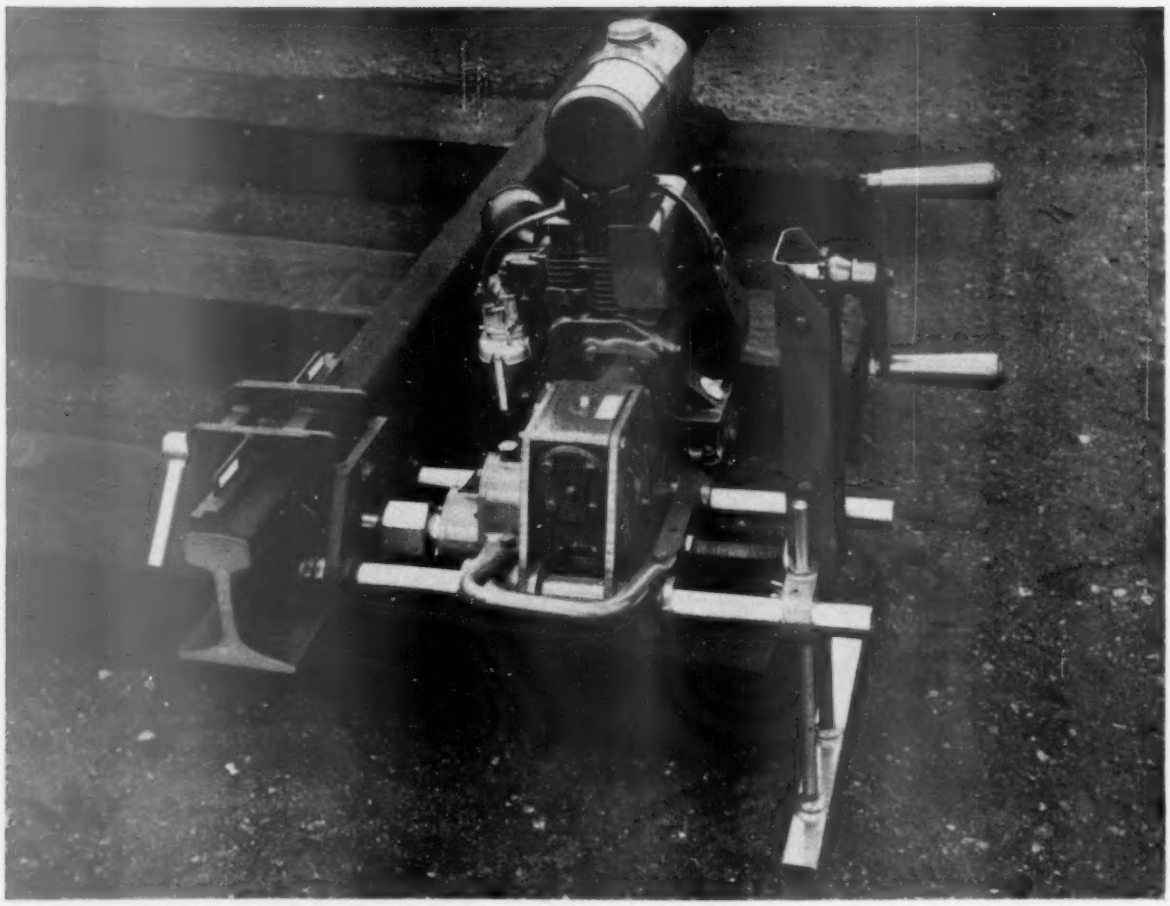

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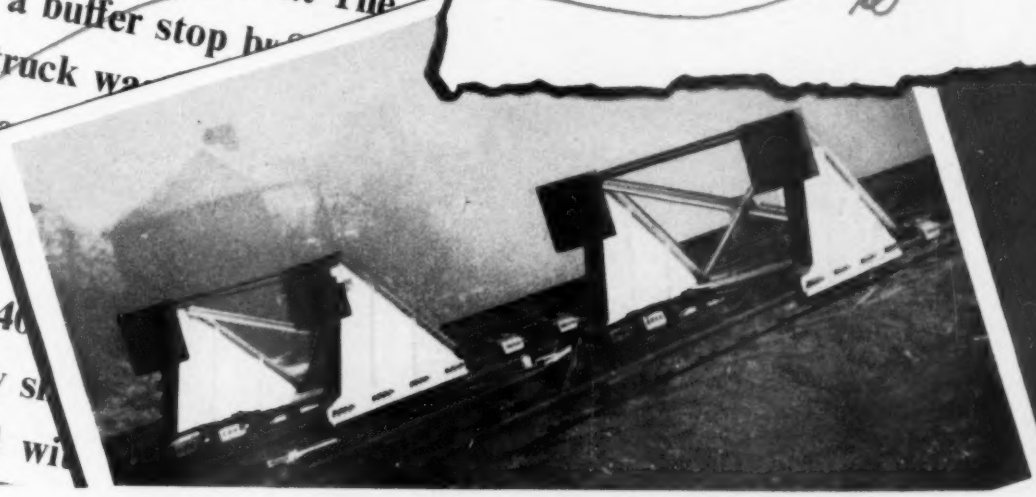

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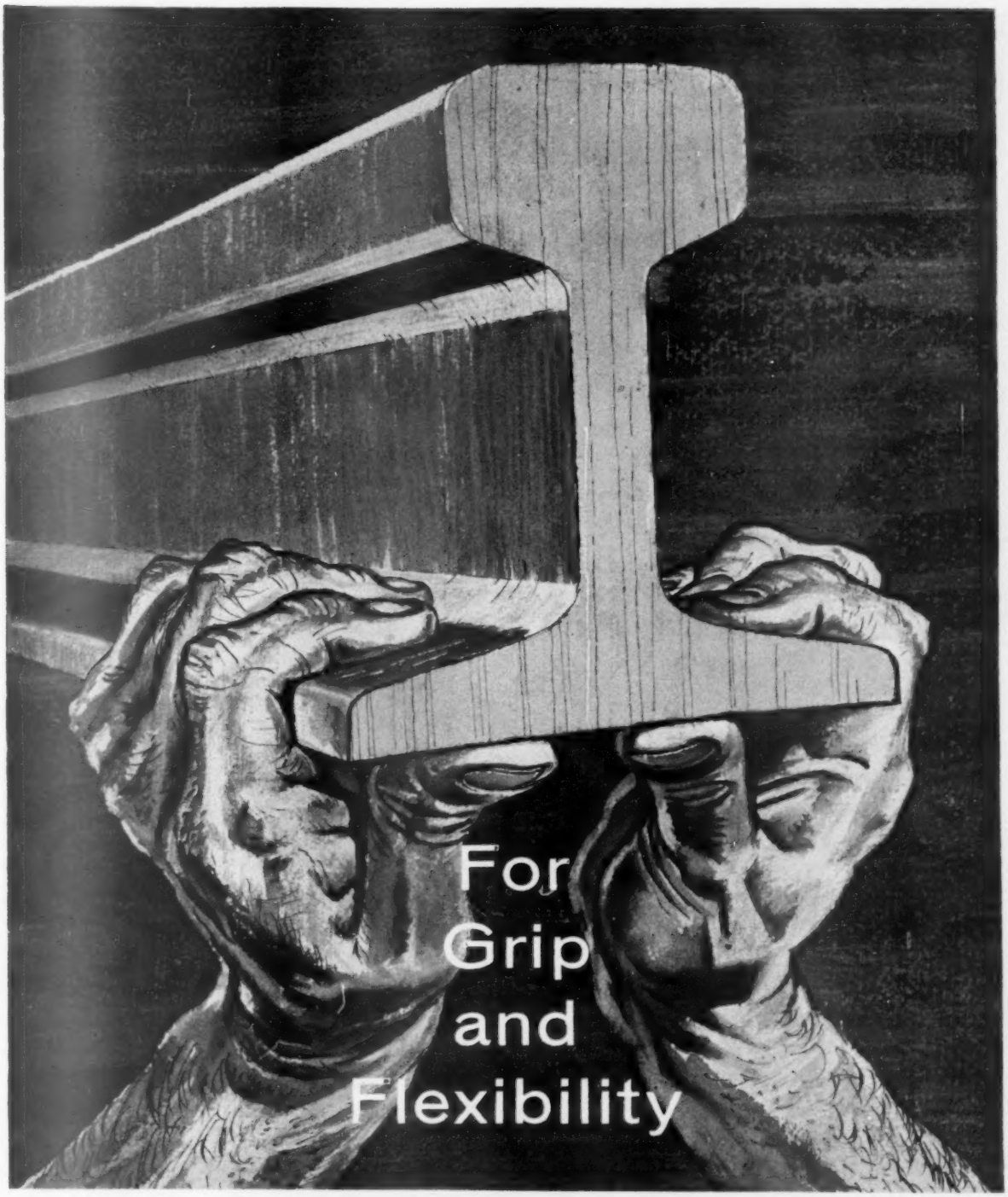

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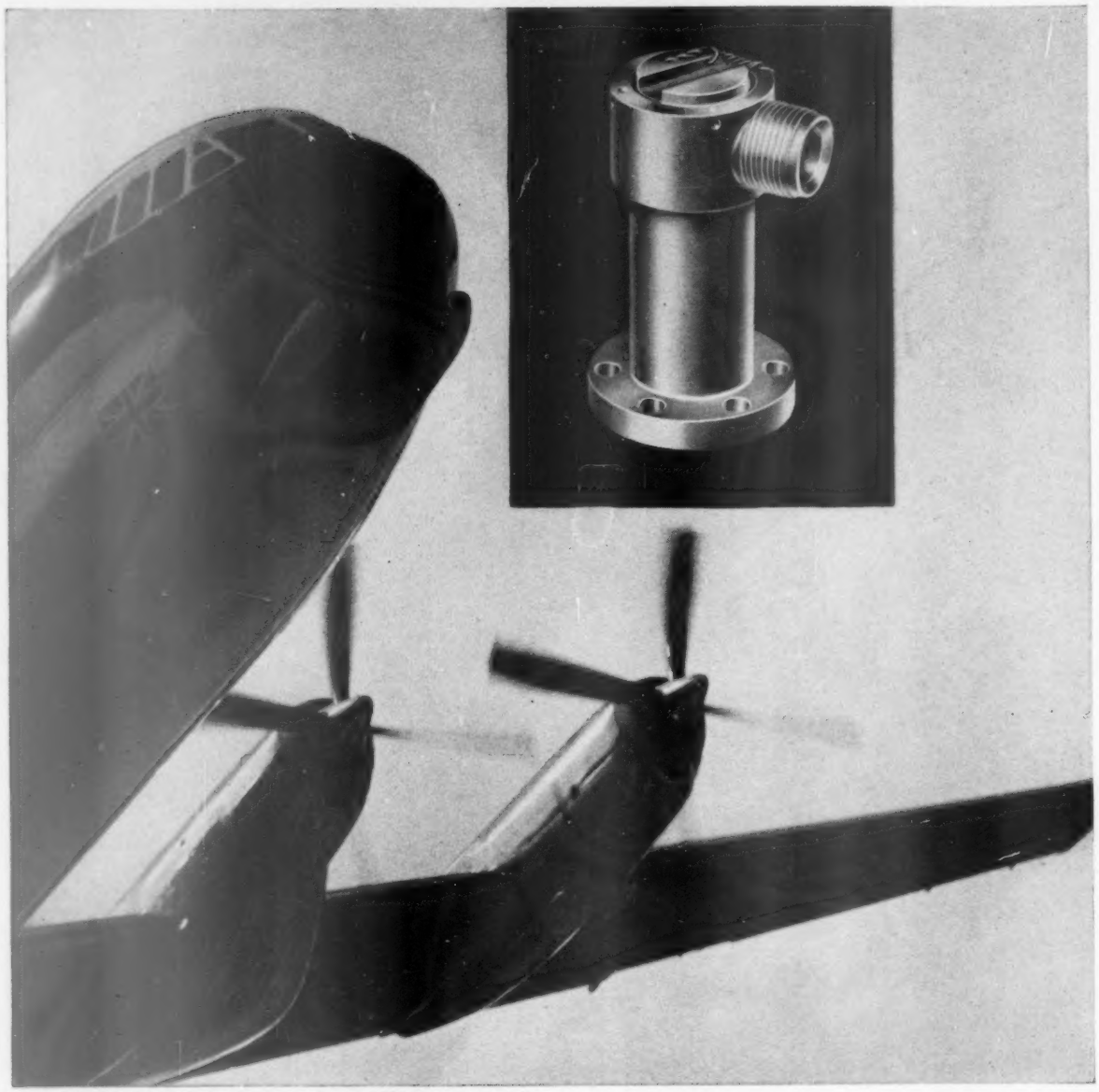

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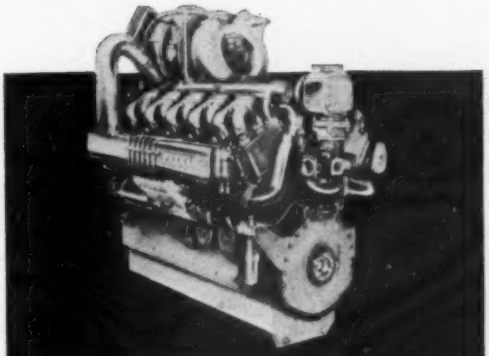

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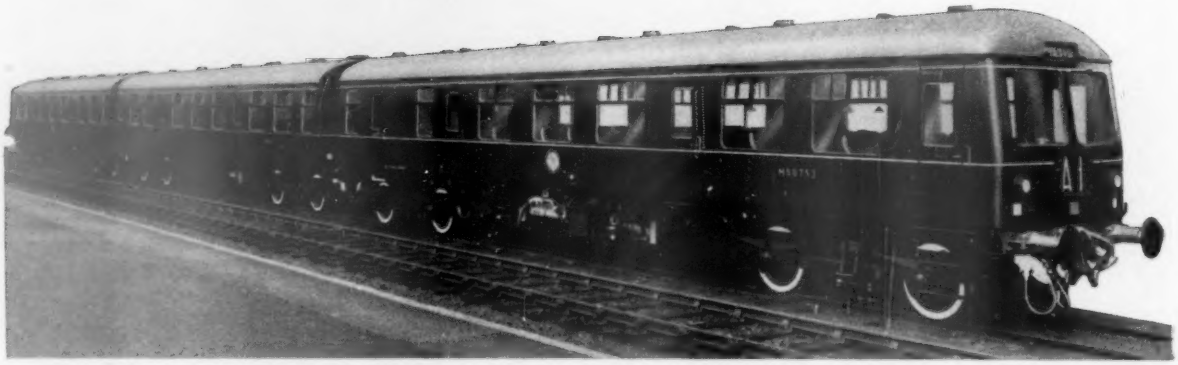

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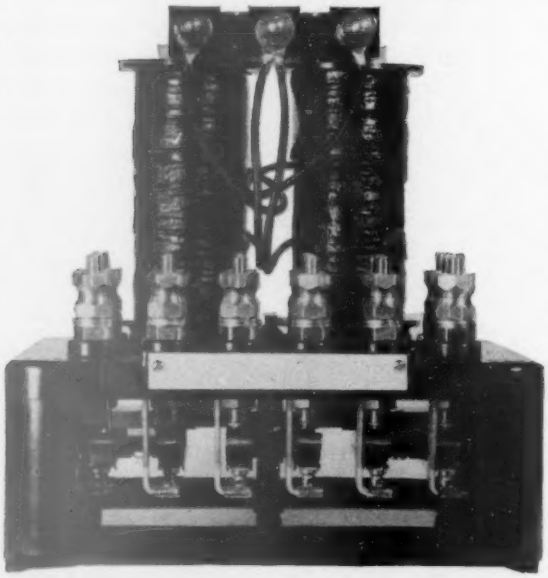

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Arm & Back, fine silver.

Contact resistance:
Carbon to carbon 0.40 ohm.
Carbon to metal 0.18 ohm.
Metal to metal 0.03 ohm.

Casework:
Moulded two-piece unit with four rectangular glass sides, so cased to ensure the contact chamber being moisture-proof.

Height: 8⅛" Width: 7⅜" Depth: 7¼" Weight: approximately 13-lb.

Terminals:
O.B.A. nut type, to B.S.S. 442 or can be supplied to A.R.A. standards. Shrouds for terminals also catered for, as also short stems for detachable coupling units.

Terminal Markings moulded in relief:
Coils R1 and R2, A. arm, F. front contact and B. back contacts.

Coils:
Moulded bobbin, non rotatable, black tropical finish.

The Relays can be immunised against the effects of alternating current.

Slow drop-away and slow pick-up features can be provided to suit individual requirements.

Packing:
Cartons designed to contain the unit for supply and storing.

Similar four arm units as Track Relays, Type G2/T and Line Relays Type G2/L cater for all two, three or four-arm contact requirements. All relay units can be fitted with detachable terminal tops.

TYER & COMPANY LIMITED
Established 1851
PERRAM WORKS · MERROW SIDING
GUILDFORD · SURREY
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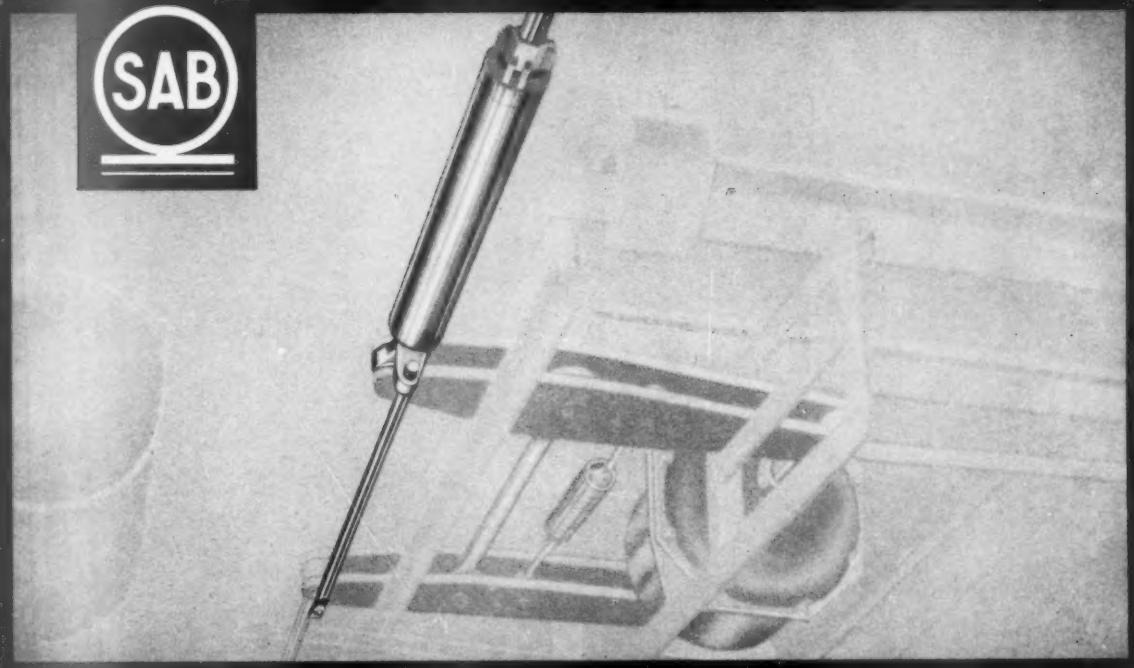
SAB DOUBLE-ACTING RAPID-WORKING BRAKE REGULATOR TYPE DRV



IN MORE THAN 50 COUNTRIES

Although the productions of the SAB Company cover a wide range of empty/loaded braking devices, the product most closely associated by railway engineers with the symbol SAB is the double-acting, rapid-working SAB Brake Regulator.

SAB Brake Regulators have been delivered to leading Railways in more than 50 countries all over the world. In most of these countries, SAB Brake Regulators have been adopted as a standard component of the brake equipment. They have gained a reputation for efficiency and reliability, resulting in an ever increasing number of installations on all types of railway vehicles.

BRAKE REGULATOR TYPE DRV

The most advanced member of the SAB slack adjuster family is the fully automatic, double-acting, rapid-working Brake Regulator Type DRV, the result of more than 40 years of specialised experience of automatic slack adjustment.

The DRV regulator is built into the brake rigging as part of a pull rod. It rapidly takes up or pays out slack, thus maintaining correct brake block clearances. In addition it contributes to easier replacement of worn brake blocks, no manual adjustment being required after the operation. The DRV Brake Regulator also makes it possible to use a simple mechanical empty/loaded braking device.

TECHNICAL ASSISTANCE

Whenever brake slack adjustment and empty/loaded braking problems require an effective solution, it is advantageous to consult SAB.

The SAB Company has built up an important service organisation which, with its expert knowledge, is ready to deal with any problem relating to brake rigging and brake installation for all types of railway vehicles.

The SAB Service Engineering Department checks proposed brake rigging designs and provides detailed installation drawings as a service to customers. It also assists whenever necessary at the actual mounting on the vehicle.

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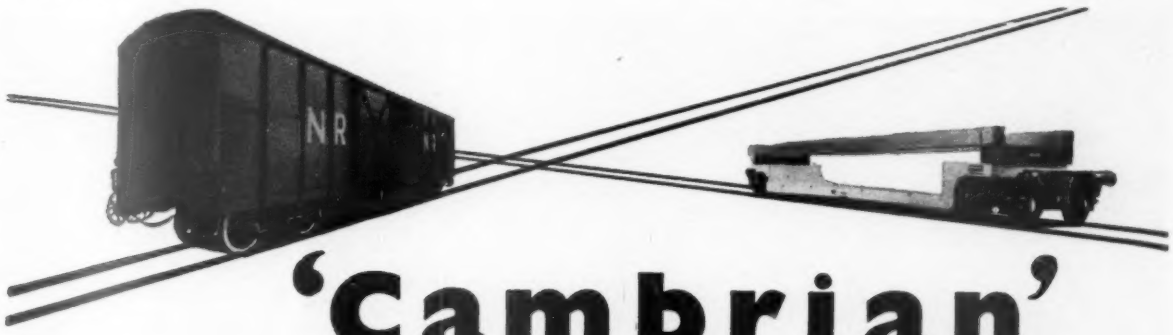

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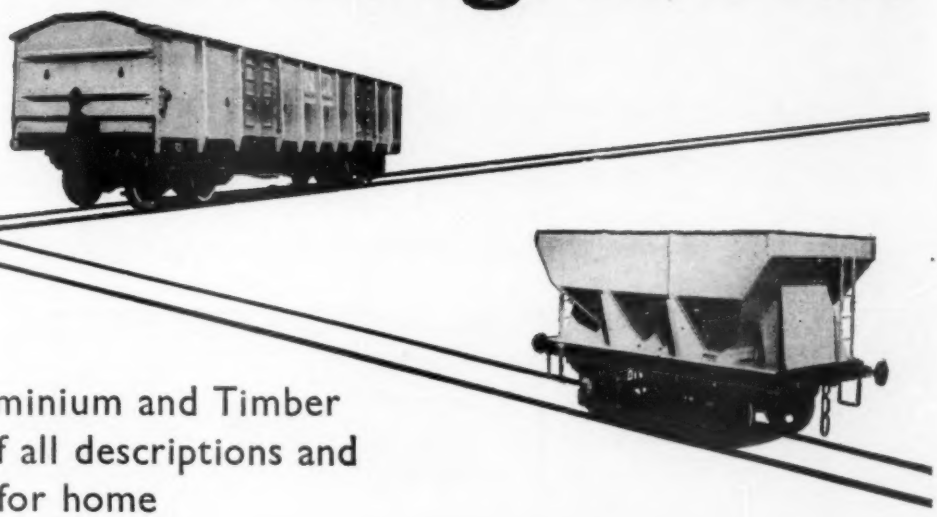
rolling stock



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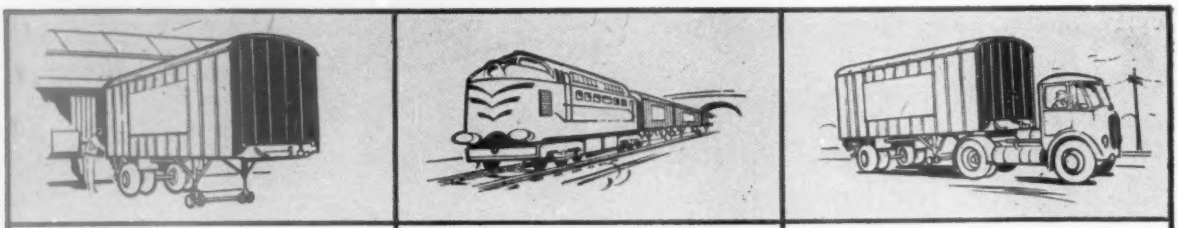
This lorry... could be up there if only it were a Roadrailer!



1 The Roadrailer, loaded at the factory as an ordinary articulated lorry.

2 The Roadrailer as part of a fast freight train.

3 The Roadrailer converted back to a lorry completes delivery by road.

What have roads got that railways haven't? Door-to-door service on the same vehicle. They also have something else—traffic jams! These can make a potentially fast service into a frustratingly slow one.

The railway's fundamental equipment is the permanent way and on direct hauls it is the cheapest form of overland transport. To neglect its clear-cut advantages on long and medium trunk hauls does not make sense.

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Feed railheads by road; trunk between railheads by rail. That makes sense. And now the Roadrailer can achieve it as a practical, profitable proposition.

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PRESSED STEEL CO. LTD.

Railway Division,
Linwood Factory, Paisley, Scotland

LONDON OFFICE: Railway Division, 47 Victoria St., London, S.W.1. HEAD OFFICE: Cowley, Oxford. BRUSSELS OFFICE: 2301/2307 Centre International Rogier, Passage International 6, Brussels 1, Belgium. Manufacturers of car bodies, Prestcold refrigeration equipment, all kinds of pressings and executive aircraft.

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As an example of our latest and heaviest machines we show a photograph of a recently completed 4 ft. 0 in. machine on test in our works. The H.P. of the reversing motor is 100, and it will be clear from the illustration that the machine has been built with proportions such that this great power can be utilised to the full. We are always happy to discuss rail planing with our clients, with a view to the production of machines exactly suited to the work done at the depots concerned.

These Rail Planers follow the practice of our standard two-column and openside Planing Machines for normal machine shop duties. All the latest developments are incorporated, to permit maximum production, and we also have available a range of high speed Milling Heads, which are proving most successful in many difficult applications.

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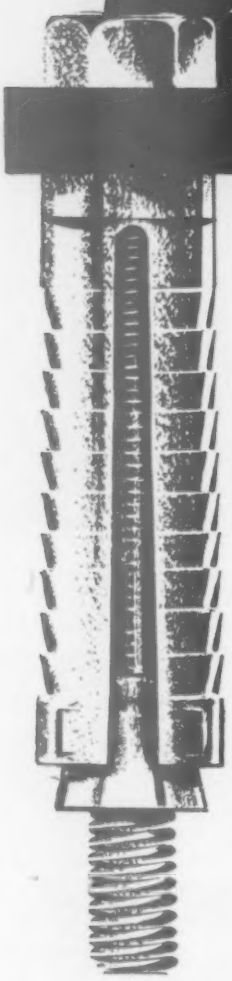
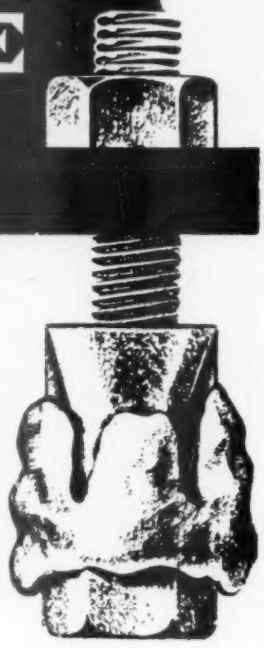
A SECURE ANCHORAGE





Where a heavy article must be positioned *before* it is bolted to concrete, brickwork or masonry — use Expandabolts. If the machinery or equipment can be placed over a bolt previously fixed — choose Anchor Bolts.

Both these simple fixing devices provide a secure anchorage which remains firm under the most violent movement.

HERE'S HOW THEY WORK:

EXPANDABOLTS

A hole is made and the complete bolt (set screw, saw-toothed split-sleeve and cone wedge) is placed in it. The set screw is removed and the article placed in position. The set screw is reinserted and tightened. This draws the wedge into the split-sleeve, forcing the saw-teeth to grip the concrete.

ANCHOR BOLTS

A hole is made, the bolt is inserted and the wedge is driven into the lead spreader, thus locking the bolt in position. The article to be fixed is then placed over the protruding bolt, and the nut is tightened.

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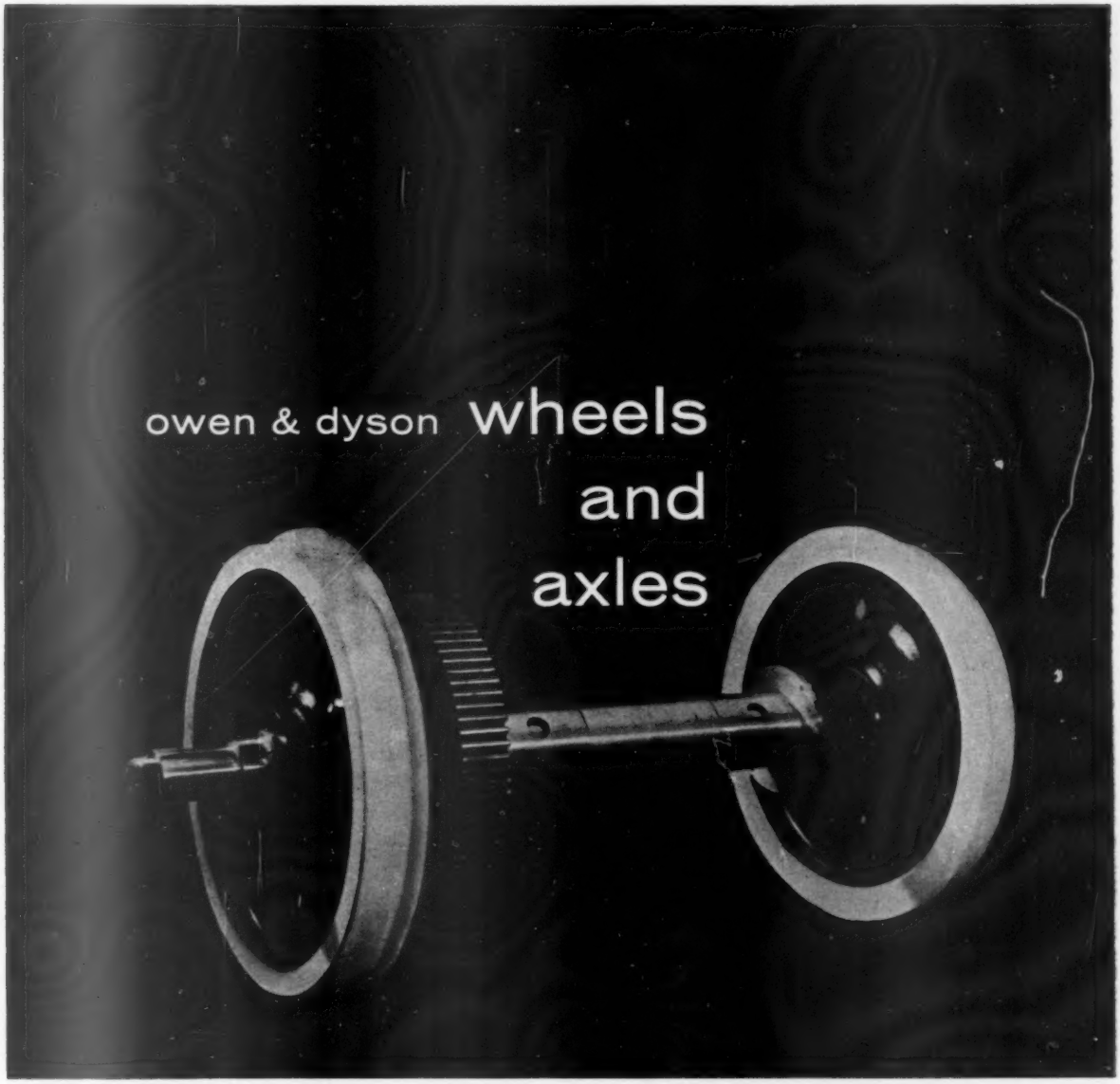

Wheel and axle sets for electric and diesel electric locomotives, carriages and wagons are produced to the high standards of finish and accuracy associated for more than half a century with the name Owen & Dyson Limited.

Owen & Dyson Limited machine and assemble components manufactured by their associated company, Steel, Peech & Tozer. They have the advantages of testing equipment including that for checking dynamic balance and for examining the effects of severe or prolonged braking.

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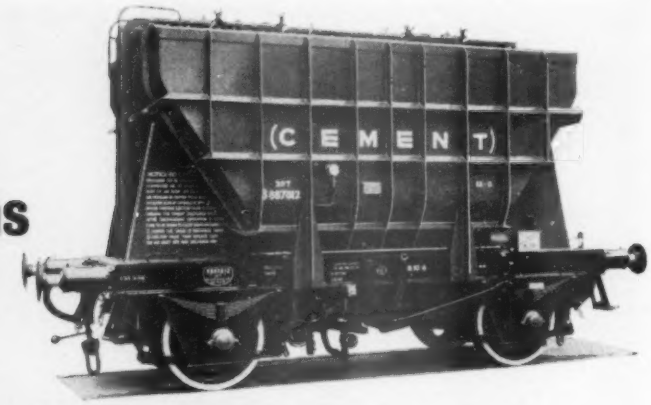

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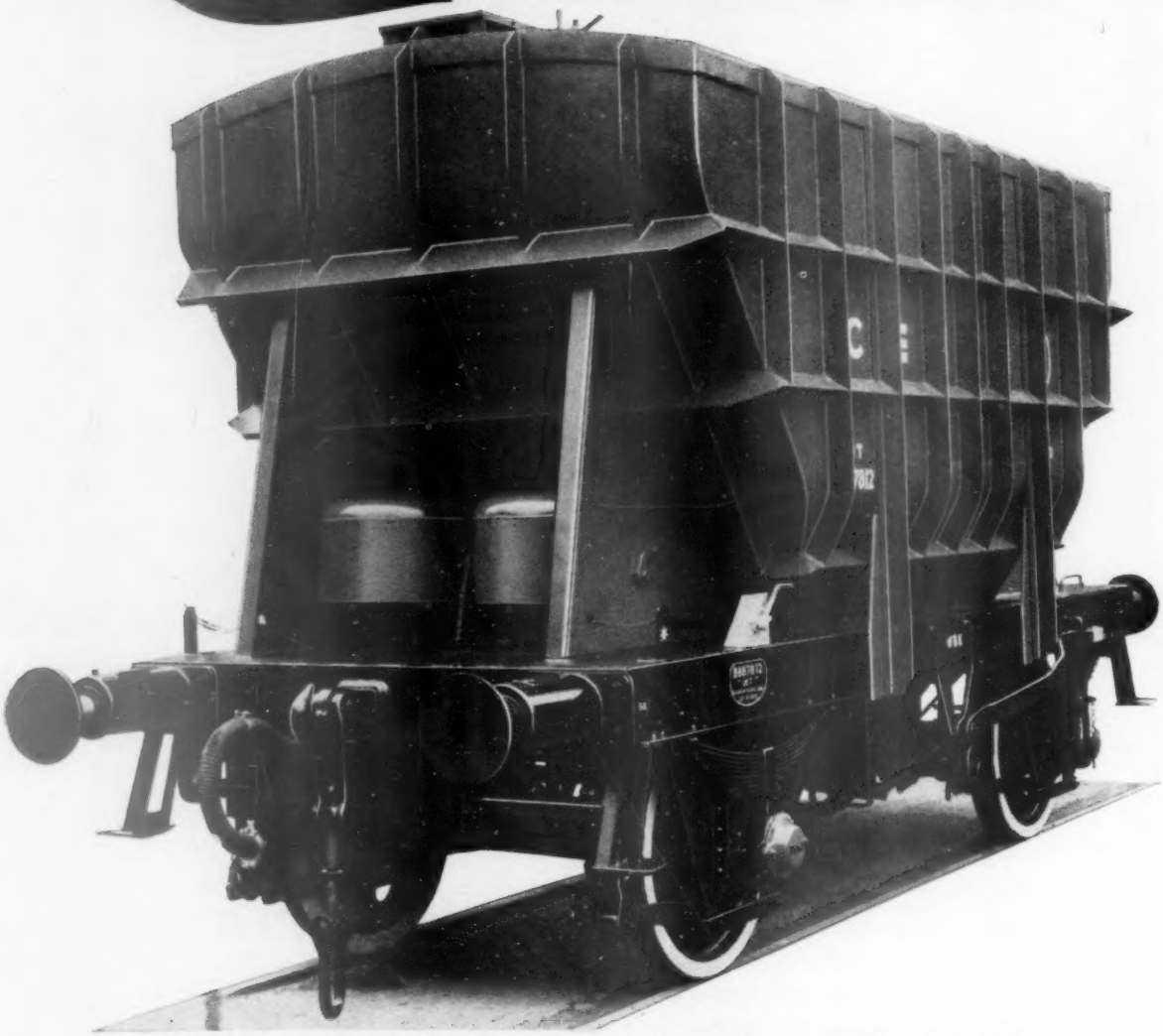

One of a large contract for 20-ton Cement Wagons built for British Transport Commission. Fitted with discharge equipment and S.K.F. roller bearings. Gauge 4 ft. 8½ ins. Wheelbase 10 ft. 6 ins.

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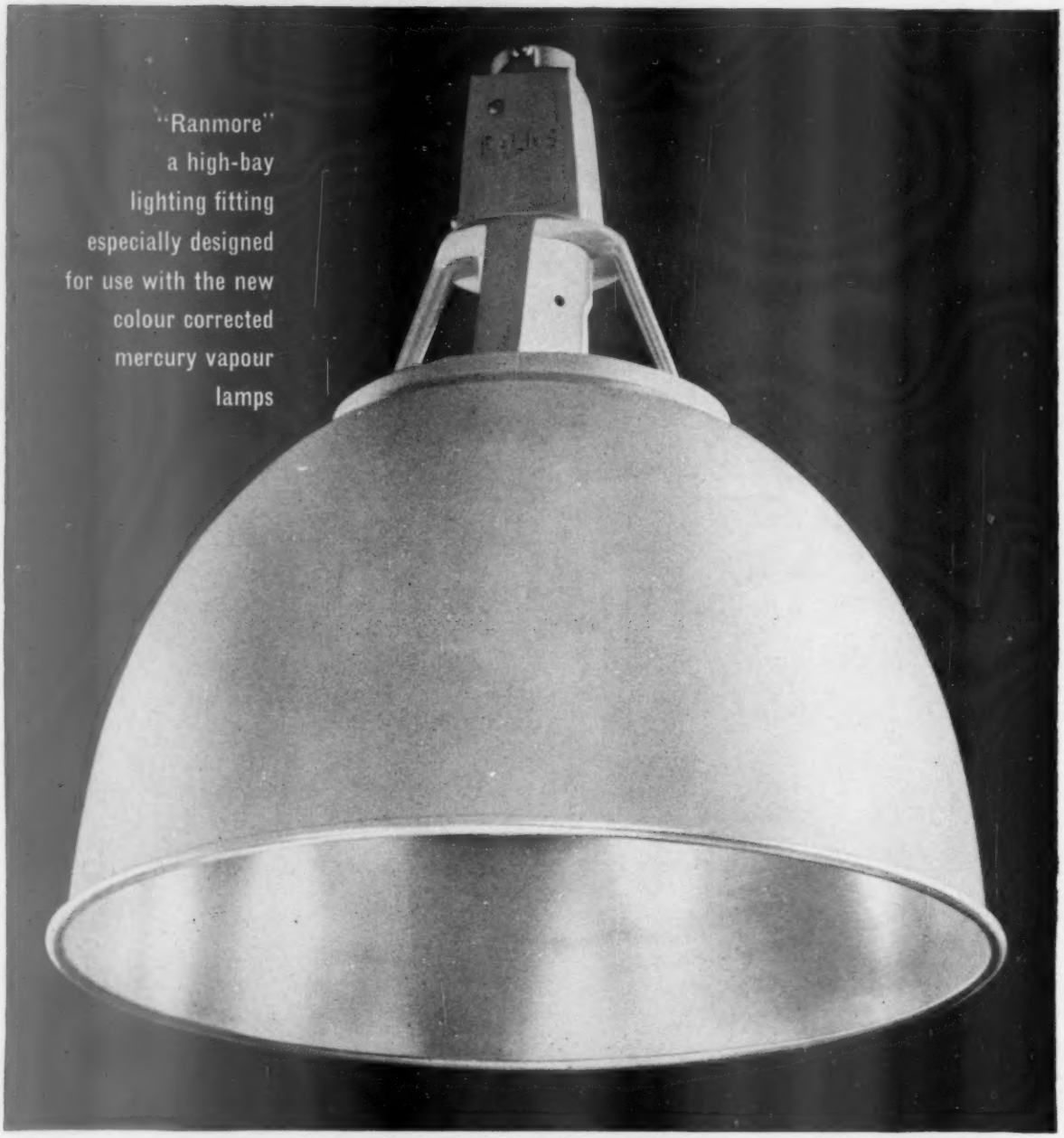

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Dials can be scaled for volts, amperes, and m.p.h.

SIZES: 90° deflection—3¼ in. and 4 in.
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SUPPLY: a.c. or d.c.

Single and double pattern edgewise instruments are also available and have been accepted by the British Transport Commission for use on a.c. locomotives.

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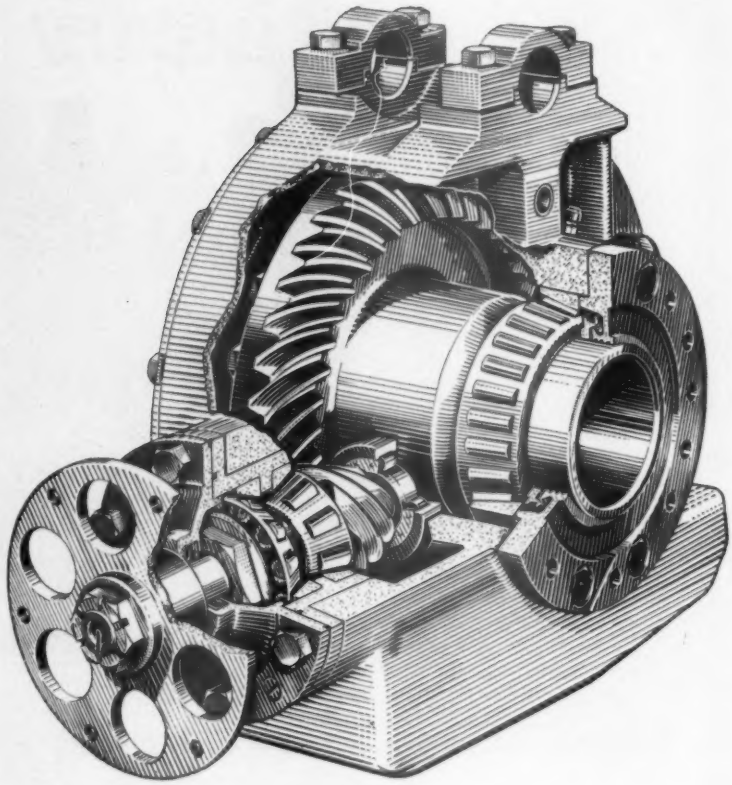

The right-angle drive, which now has so many applications for diesel and electric traction, is a job for the specialist.

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Production facilities include the most modern gear cutting and heat treatment plants, enabling precision spiral bevel and hypoid gears to be supplied with profile ground teeth when required for high speed applications.

Traction engineers and designers who need right-angle gears or transmissions are invited to communicate with ENV Technical Department at the design stage.

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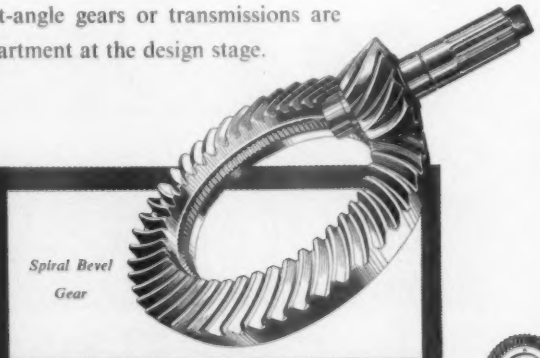

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INSIDE

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The above photographs of Diesel Rail Cars with "Alhambrinal" panels are by courtesy of British Railways.

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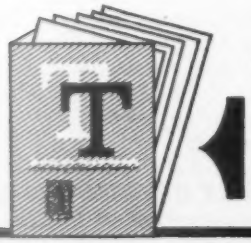

LITERATURE ON REQUEST. We will be glad to send you, without obligation, a booklet containing fuller details of the products mentioned in this advertisement. Samples of "Alhambrinal" and Roofings are also available.

Maybach diesels power the new Hymek locomotives

Bristol Siddeley Maybach* diesel engines have been chosen for the new Hymek diesel-hydraulic locomotives. 95 of these Type 3 locomotives have been ordered for main-line use on British Railways Western Region. This now brings the total order placed with Bristol Siddeley for British Railways to 286.

DESIGNED FOR ECONOMIC OPERATION

Bristol Siddeley Maybach rail traction diesel engines range from 384 to 2,000 hp and embody design features which produce more efficient operation in terms of lower wear, greater reliability and easier servicing.

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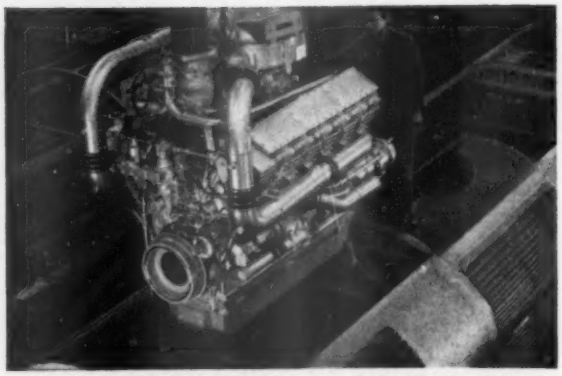
Disc-webbed, roller bearing crankshaft and tunnel housing

This results in very low main and big-end bearing wear. The pressure-oil cooling of the pistons gives effective heat dissipation which reduces liner and gas ring wear to a minimum.

Since the majority of components are identical in all models, spares stocks can be cut and servicing is simplified through interchangeability.



Maybach diesel engine being installed in D800 Class at Swindon.

WORLD-WIDE SERVICE

Maybach engines are in service all over the world, and have built for themselves an unsurpassed reputation as the most efficient diesel engines of today. This reputation, backed by the efficient Bristol Siddeley after-sales and spares service, offers the most satisfactory solution to all rail traction requirements.

For further information, please write to: Power Sales Manager, Power Division, Bristol Siddeley Engines Limited, PO Box 17, Coventry, England. Cables: Brisidair, Coventry.

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plus all the accuracy you need

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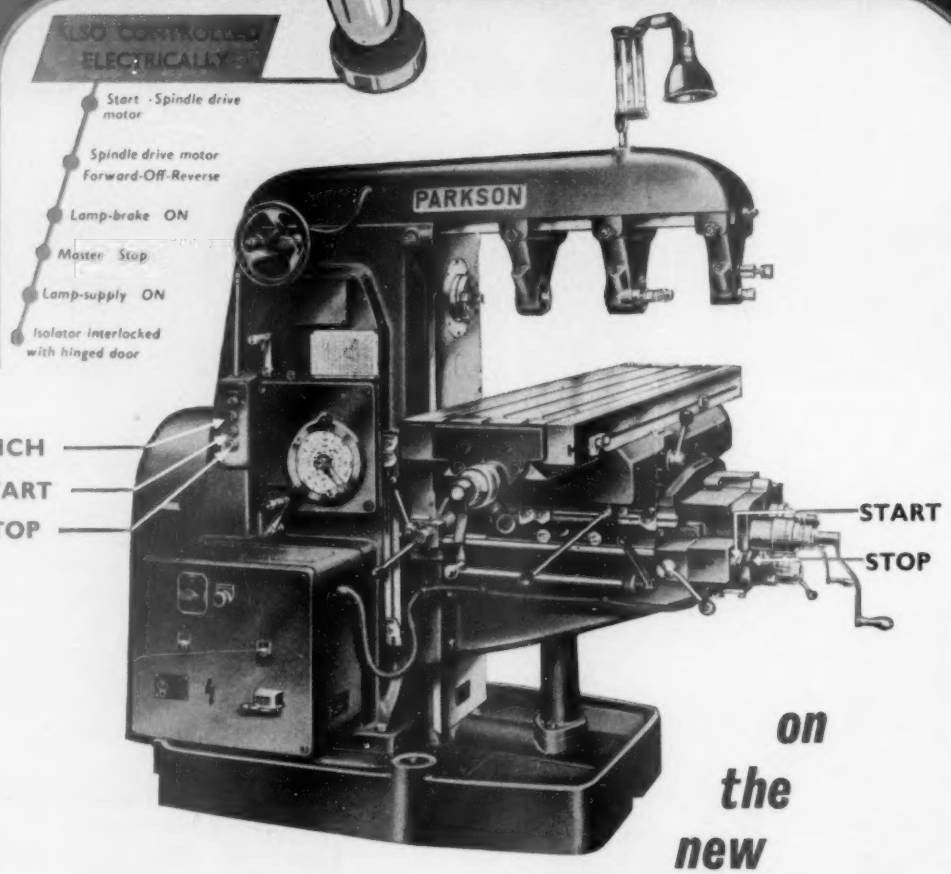

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28 Spindle Speeds in range as selected.	17	to	1000	r p m
	or 23	to	1330	r p m
	or 25	to	1500	r p m

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	Size		Movements	
	English (inches)	Metric (mm.)	English (inches)	Metric (mm.)
Plain	70 x 16½	1780 x 420	40 x 12 x 18	1015 x 305 x 455
Universal	60 x 14	1525 x 355	36 x 12 x 18	915 x 305 x 455

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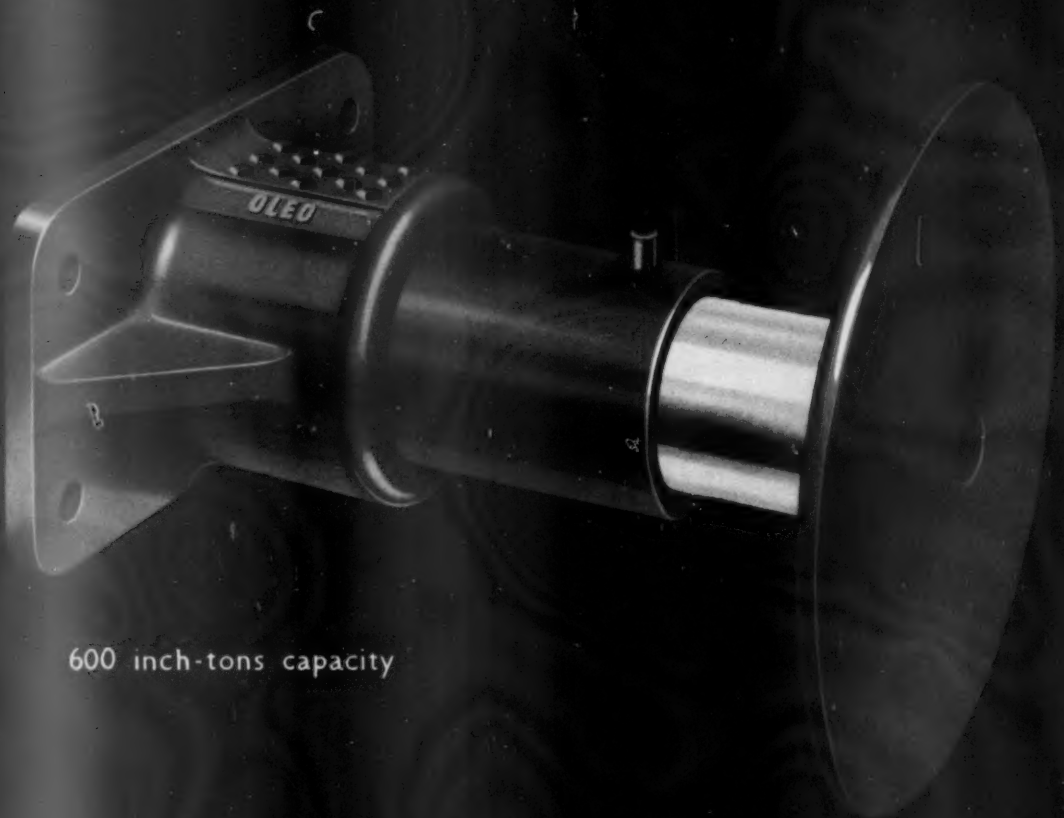
Pioneered by Oleo



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Oleo Pneumatics Ltd

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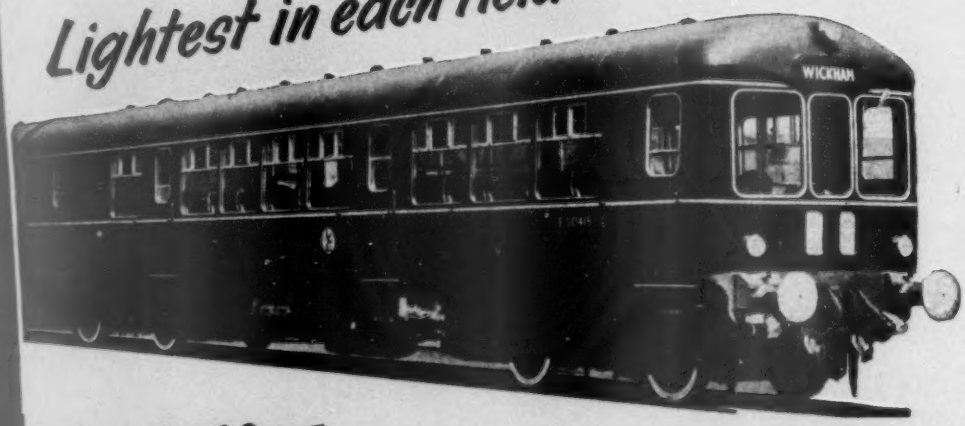
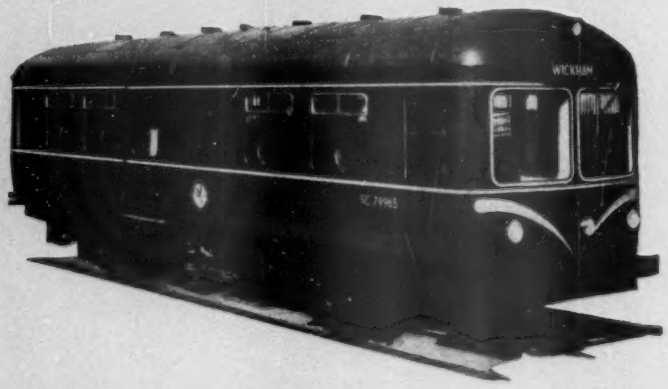
Lightest in each field



because —

stressed body construction as used in these cars provides the lightest and strongest type of coach. The Wickham method of tubular construction has now given over twenty years, successful service under exceptionally severe conditions in many parts of the world.



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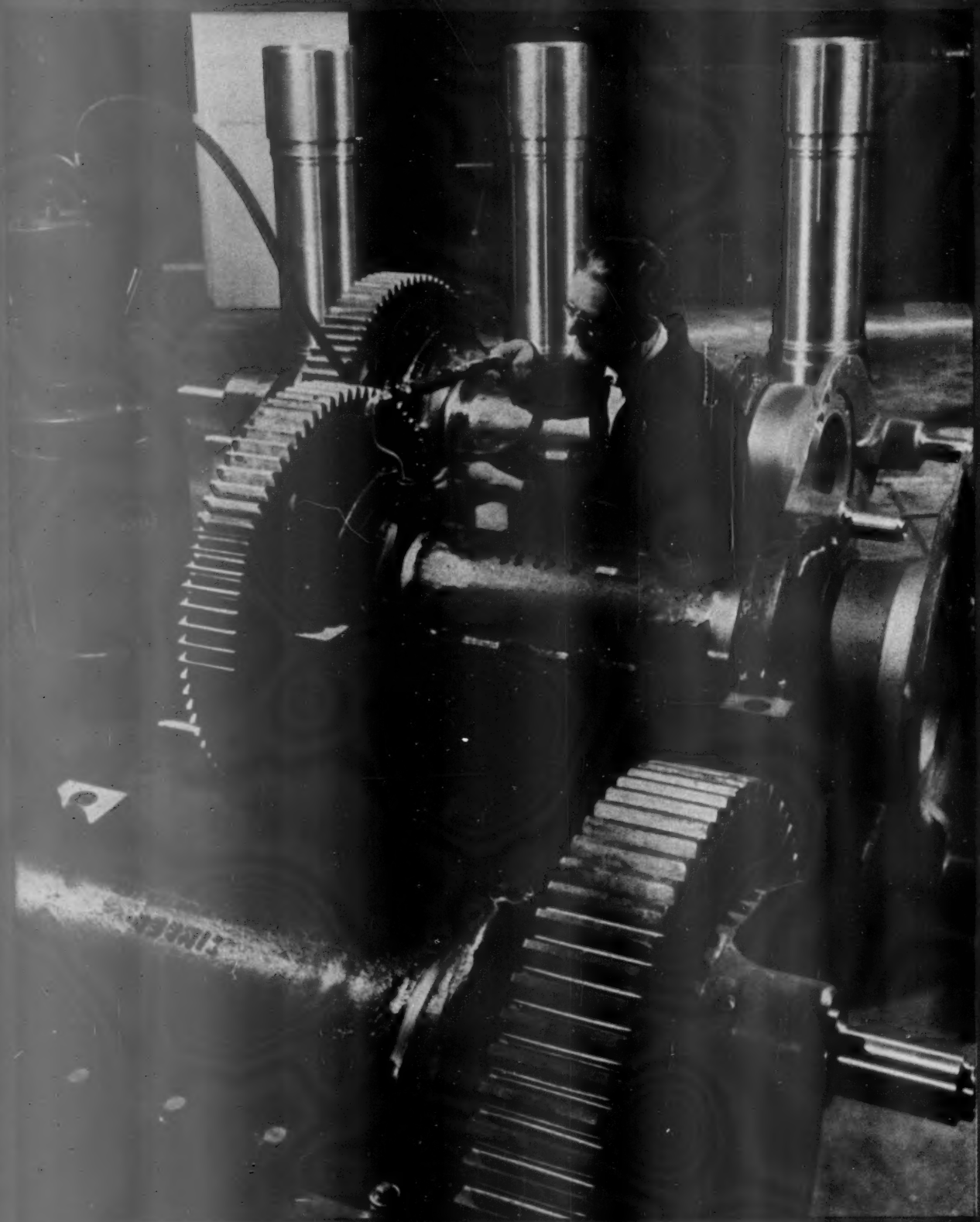

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The
RAILWAY GAZETTE

INCORPORATING: THE RAILWAY ENGINEER • TRANSPORT • THE RAILWAY NEWS • THE RAILWAY TIMES • RAILWAYS ILLUSTRATED
HERAPATH'S RAILWAY JOURNAL (ESTABLISHED 1835) • THE RAILWAY RECORD • THE RAILWAY OFFICIAL GAZETTE

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The future of British Railways

IT IS unlikely that Mr. S. F. Greene, General Secretary of the National Union of Railwaymen, will receive immediate fulfilment of his demand that Dr. Richard Beeching, Chairman of the British Transport Commission, should reveal his plans and assure railwaymen that they will receive safeguards and improvements in their conditions of service. Mr. Greene was speaking on July 4 at the annual conference of the N.U.R. at Edinburgh. It is also unlikely that Mr. Greene really expects his request to be met. He must realise that it is very probable that Dr. Beeching could not meet it at the present time, and will not be in a position to do so until his study groups have completed their various surveys and have presented him with the information on British Railways for which he is waiting. It should be remembered that the information gathered by the study groups will be entirely new, for it will have been collected on the basis not of an existing but of a projected organisation, the outline of which is contained in the White Paper on nationalised industries. It is because the information is required in this fresh light that use cannot be made of existing statistics gathered within the framework of the existing organisation. In these circumstances, it is difficult to see how Dr. Beeching can promise safeguards and improvements in conditions of service—not until he receives the reports of the study groups will he be able to decide how best to frame the size and shape of the railways with due consideration to the realisation of potentials and to the erasure of waste and duplication. Mr. Greene added that Dr. Beeching had stated he could not afford an overall increase in wages and commented: "We have never argued that our wages or salaries could be based on what they could afford . . . whether he can afford it or not . . . he must at least maintain the standards of the members we represent." As we stated last week in relation to the word "fair," the phrase "maintain the standards of the members we represent" is entirely a relative term and allied to that of cutting one's cloth according to the amount available. Phrases such as these have played as great a part in bringing British Railways to its present plight as have the vacillations and mismanagement of the Government.

Underlying truth

AT THE annual conference of the N.U.R. a point was made, and is covered in greater detail in this week's "Scrap Heap," regarding the decentralisation of the British Transport Commission's Hotels & Catering Services. Described by one national newspaper as "a welcome moment of light relief (though he did not intend it as such)," it came in a speech from a restaurant car attendant. Mr. B. V. Colling, from Clapham Junction, stated that the refreshment rooms had been modernised and brought up to "a peak of perfection which exists nowhere else in the world." He went on to detail the means by which sandwiches are supplied to British Railways by a central organisation. He might also have referred to the laundering arrangements, the centralised bottling establishment through which the service is able to offer wines at prices competitive with those of any other catering establishment in the country, and the centralised staff training facilities. As Mr. Colling went on to ask: are things like these to be completely upset because the railways revert to a regional basis and come under separate managements ?

Additional finance for B.T.C.

A SUPPLEMENTARY estimate for £27 million for British Railways has been submitted to Parliament in a White Paper dated July 6, 1961: the Ministry of Transport's revised estimate of the grant towards the British Transport Commission's deficit for the current financial year is now £130 million, against the original figure of £103 million. Although the extra requirement is likely to be strongly resented by many Conservative members of Parliament, it cannot have come as a surprise: Mr. Ernest Marples, the Minister of Transport, has already told the House that the Exchequer will have to provide large sums over the next two years to meet current deficits. Dr. Robert Beeching, Chairman of the Commission, gave a similar warning when he stated that rail losses might get worse before they got better. The British Transport Commission has stated that the main reason for the addition is that it is taking longer than expected

to reduce working costs. Other factors are the fall in goods traffic; the rising price of oil, higher pay for railway police, and more money for railway pensioners.

Pearlitic malleable iron castings

A LEVEL of quality for pearlitic malleable iron castings and tests for ensuring that castings come up to this standard are laid down in newly-published B.S.3333. The properties specified in the standard can be obtained by various manufacturing techniques; the standard therefore does not stipulate any particular process. Castings are divided in two grades and requirements and tests for tensile strength, permanent set stress, elongation, and hardness are laid down for each grade. Requirements are also laid down for microstructure workmanship and finish of castings. The standard deals with heat treatment of test bars, the number to be tested, and the procedure to be followed if a test bar fails for any reason but the presence of primary graphite. Dimensions are also specified for tensile test bars, with alternatives based on practice in several other countries. Copies of the standard can be obtained from the British Standards Institution, Sales Branch, 2, Park Street, London, W.1, price 4s. 6d. each (postage extra for non-subscribers).

Progress report

ALTHOUGH an excellent production, with its many half-tone illustrations and its attractive layout on art paper throughout, the British Transport Commission's " Modernisation Progress Report " suffers from one important omission. Reviewing the introduction of diesel and electric trains and the building of passenger stations, and providing an insight into behind-the-scene work, it does not show the financial improvements which are suddenly beginning to show after years of difficult superimposition of what is virtually a new railway system over an old one which must continually serve the community 24 hours a day. To the railway enthusiast, be he railwayman or user, the details of modernistation possess their own fascination: the general public embraces a solid core of anti-railwayists, which doubts the value of pouring money into expensive projects which, it believes, is unlikely to show a return. Plus some telling diagrams or tables showing the emergence of solid money from the work which has been carried out, this booklet would be of even greater value than it is.

New melting and rolling mill

INGOT production by the English Steel Corporation will be increased to a million tons a year when the Tinsley Park steel plant, inaugurated last week by Lord Knollys, is in operation at the end of 1962. The development of this 500-acre site at a cost of £26million, stated to be the largest project yet undertaken in Sheffield, is the first stage of a long-term development plan by the English Steel Corporation. Steel erection for the buildings will begin this year, covering a floor area of 1 million sq. ft. The mill will be equipped with two 100-ton electric arc furnaces, a 42-in. blooming mill, and two 32-in. billet mills. In his inaugural address, the Chairman paid a warm tribute to the foresight of his predecessor, the late Sir Frederick Pickworth, in securing this last substantial area in Sheffield for works development. Also commissioned on the same day was an 80-ton electric arc furnace at the River Don Works.

Training diesel drivers

AT THE opening by Sir William Stanier of the training school for diesel train drivers at Derby, it was stated that over 3,700 footplate staff have been given diesel driving instruction since the original London Midland Region school was inaugurated in 1955. The rate of training has had to be increased to meet the speed of changeover from steam to diesel traction and the new centre is planned for an annual intake of 1,500 trainees. The building is of Derwent prefabricated timber construction and was completed in five months at a cost of £21,000. The contractor has previously used this form of construction on a number of British Transport Commission projects. Every facility has been provided to interest and assist trainees, the majority of whom have spent many years with steam locomotives. A noteworthy feature of the training is that, although the course is largely theoretical, the instructors are all experienced diesel locomotive drivers. The school is also used for the training of mobile instructors.

Polish State Railways in 1960

DURING 1960 the Polish State Railways handled no less than 84 per cent of all freight moved by all forms of public transport in Poland. A record weight of nearly 287 million tons and also a record movement of 66,500 million ton/km. were achieved. Furthermore, 816·6 million passengers were carried. By the end of the year, out of a total route-mileage of 16,711 well over 600 had been electrified, and the length is expected to be doubled by 1965. During the five-year period 1960-65, the administration will, according to programme, purchase 36,500 wagons; 1,200 coaches; 300 three-coach and four-coach multiple-unit trains ; 250 electric locomotives, and from 330 to 380 Polish-built diesel locomotives. The number of locomotives to be imported has not yet been decided. It may be noted that Poland is an important producer of rolling-stock, wagons in particular, not only for the home market but also for export. In fact, the sum of 27,000 million zlotys is earmarked for railway purchases of all kinds, and 13,500 million of this will be spent on rolling-stock during the five years.

Improvements on the Assam rail link

THE strengthening of that vulnerable submontane railway, the Assam Link section of the Northeast Frontier Railway, made a big step forward when Mr. Karnail Singh, Chairman of the Indian Railway Board, recently opened the Jaldhaka Bridge. In common with many other rivers debouching from the Himalayas that have to be crossed by this line, the Jaldhaka constantly shifted its torrential course and damaged or outflanked the bridge originally built when " The Link" was constructed in record time after Partition. The new bridge consists of eight spans each 150 ft. in length and supported by piers carried on well-foundations sunk to 46 ft. below low-water level. The estimated cost is about £345,000. With the 5-ft. 6-in. gauge route from Calcutta being extended to Siliguri and in view of the installation of C.T.C. on the metre-gauge section eastwards to Assam—The Link—not to mention the completion of the Brahmaputra Bridge in 1962, communications by this route should be vastly improved within the next year or two.

Proposed Underground for Auckland

FOR a great many years proposals have been put forward for the construction of an underground railway for Auckland, the largest city in New Zealand. Railway engineers have studied the Morningside Tunnel plan, and as long ago as 1924 a scheme was laid before Parliament, the estimated cost then being £600,000. Reconsideration of the project in 1946 placed the figure at £1·5 million. More recently it was considered desirable to consult some of the foremost engineers in the U.K., and after thoroughly investigating Auckland transport proplems, Sir William Halcrow and Mr. J. P. Thomas, presented a report, made public in October, 1950. They recommended an underground railway through the heart of the city at an estimated cost of between £5 million and £7 million. The local authority now considers that a complete underground railway

system in Auckland would cost at least £20 million and that though this is impracticable at present it should be provided as soon as possible to link Auckland railway station with the centre of the city. It was considered that Auckland would need an underground rail system in about 20 years' time.

The problems of railway development

IN a most interesting paper entitled "The problems associated with future developments of railways in the London Division of the Western Region," Mr. G. A. V. Phillips, Divisional Traffic Manager, Western Region, British Railways, outlined many of the difficulties which are facing railway officers all over the world today. Mr. Phillips was speaking at the annual convention of the Railway Students' Association at Oriel College, Oxford, on July 3. The Chairman-President on that occasion was Mr. J. R. Hammond, General Manager of the Western Region of British Railways.

The most important single change that modernisation would bring to the London Division, thought Mr. Phillips, was almost certainly the complete replacement of steam by diesel traction. Many problems were involved here: right specifications had to be determined in size and horsepower; vacuum brakes would be required for all diesel-hauled freight trains; the present method of estimating maximum trainloads would have to be revised to ensure that full advantage was gained from the greater precision with which loads could be calculated in the case of diesels; there were difficulties in providing train heating; there were problems of maintenance and control, and last but not least, there were the matters of recruitment and training. Traditional training grounds were dwindling—this applied to shunting yards operated by steam traction; freight and motive power depots, and small stations. It affected the supply of staff possessing an all-round railway background right up to executive level.

Second in importance to dieselisation was the new signalling which was being installed. Over main lines, the London Division was introducing multiple-aspect colour-light signalling with large central signalboxes. The problem here was how to justify their cost: each additional increase in line capacity involved proportionately greater expense. Four-aspect signalling, an improvement over three-aspect, nevertheless was not justified at every point; how was it to be used wisely and without confusing engine drivers by its proximity with three-aspect installations? The number of connections must be simplified and decreased, bearing in mind the pattern of future movements with freight concentration and the new diesel depots which were planned. Many hoped-for economies would depend partly on improvements achieved in other fields, such as the fitting of continuous brakes. The expansion of the traffic costing service was providing a clearer understanding of the financial effects of different patterns of traffic flows and the Division must intensify its research on these lines with the specialised advice now at its disposal. Similar problems arose in connection with the re-building of stations.

Mr. Phillips gave considerable attention to the problem of line occupation by the technical departments. These occupations resulted in delays which must be minimised; other countries had overcome this problem, and it must be tackled here. A method being tried out might be an answer; under it, occupations were planned sufficiently far ahead to enable them to be properly co-ordinated and phased. It might be necessary to carry out less permanent way work on Sundays, a day used by many people for pleasure travel and to return from their weekends away from home. Mr. Phillips examined one of several possible ways of avoiding Sunday occupations of the line.

Referring to freight traffic, he stated that one of the greatest single problems the Division had to solve in modernising freight services concerned the elimination of unfitted trains. Marshalling yards were the weak point in plans for improving freight services; yard staff was in extremely short supply, and much of the work was difficult to mechanise. By increasing the number of fitted trains the Division would impose an additional burden on staff; as fitted trains were essential, the solution must be to develop an automatic coupler which also would connect the vacuum pipes. Meanwhile, usage of freight stock would have to improve if the cost of fitting was to be economically justified.

Freight must be concentrated and freight timetables rationalised to achieve a more even work-flow at yards. Work study promised well, but raised problems of pay differentials. An important question to be considered was whether a separate parcels service should continue to be provided. At present, this traffic imposed a heavy burden on passenger stations. It might perhaps be amalgamated with road collection and delivery services, or perhaps it could be concentrated separately. This was a problem which must receive early solution in view of the planning of new station facilities and train services.

A method must be devised for obtaining a more continuous and up-to-date picture of spare freight stock available. A system called Continuous Progress Control was being tried out in South Wales which, based on regular reports to the District Countrol Office, provided this information. Attention must also be directed to the design of the standard wagon. Almost certainly too small, this also had several other weaknesses from the point of view of loading and general economy.

Mr. Phillips concluded his paper with a brief reference to what he rightly described as "one of the major problems with which management is faced today—the diminishing extent to which one can divorce one's mind completely from day-to-day matters and commitments in order to find time to think."

Integration on C.I.E.

IN a recent policy speech, Dr. C. S. Andrews, Chairman of Coras Iompair Eireann, stated that there was more to running a transport organisation than simply to canvass for more traffic. At least of equal importance, for instance, was the method of handling that traffic. It was the constant endeavour of C.I.E. to integrate its two methods of transport: the rail and road systems. One must complement, rather than compete with, the other. The system would continue to pursue this policy. The ultimate solution lay in the introduction of modern techniques such as the greater mechanisation of stations and the more widespread use of containers.

Dr. Andrews went on to emphasise that the actual meaning of the phrase C.I.E. was the transport system of Ireland: it was not just a rail system, or merely a road system, but a transport network. He could not find any inherent advantage in one form of transport over that of another; the only valid considerations were those of efficient service and economy. That attitude seemed to him to be perfectly reasonable: at any rate, it was the only workable approach to the national transport problems, and had underlain the reasoning which had shaped C.I.E. policy. It was that consideration which had made it inevitable that road services were substituted for rail services on a number of branch lines during past months.

The Heavy Haulage Section of Coras Iompair Eireann, which is located at Amiens Street Station, Dublin, is a good example of the integration to which Dr. Andrews refers. Inaugurated in 1950 and supervised by two former employees of the mechanical section of the railway, it is part of the Road Freight Department and works in conjunction with the railway. Whenever the Commercial Department receives an inquiry relating to heavy haulage, a decision is taken as to whether the job is one for the railway or for the road section, or for both, and arrangements are made according to that decision.

The men for these heavy haulage jobs are specially selected from the panel of drivers and helpers having their headquarters at Broadstone and, as their assignments demand the best in driving and technical skills, the men are chosen for their "mechanical leaning." The work of the section covers the installation of bulk-fuel tanks for oil companies, the removal

of complete factories from one place to another, the haulage of heavy but delicate electronic equipment, the transport and placing of statues and memorials of all kinds, the delivery of heavy-duty mining equipment to quarries and mines, and the launching of yachts and boats or the raising of them from the water. On engineering assignments, the heavy haulage men inspect the site and advise as to the roads the drivers should use for transporting the machinery. Certain walls in factories may have to be left open until the men have delivered and placed the machinery in pre-selected positions. Faced with this varied assortment of tasks, the section has adopted the motto of "Anything, Anywhere, Anytime." This motto adorns the front of the furniture removal vans which were introduced as a service during 1960.

The following figures provide an indication of the freight results which have been achieved under the policy of integration during the first full year's working of C.I.E. since the introduction of the Transport Act of 1958: rail freight revenue during 1960, £4,267,007 (£4,143,687 in 1959); rail freight tonnage during 1960, 2,517,905 (2,422,597 in 1959); road freight revenue during 1960, £2,034,274 (£1,833,893 in 1959); road freight tonnage, 2,832,540 during 1960 (2,423,050 in 1959). Although small, these increases are significant during the relatively short period they cover and provide an interesting pointer for further study.

Experience at Margam

IN our issue of April 15, 1960, we described the large marshalling yard at Margam, in the Western Region of British Railways. This yard, which is very largely automatic in operation, has now been operating for more than a year; we have recently had an opportunity of discussing on the spot some of the experience gained during this period.

The yard has functioned easily and well, and although so far the traffic handled has been only about one-half of the designed capacity, it could comfortably deal with the 4,000 wagons a day for which it was designed. Most of the traffic passing through is in the down direction and is spread equally over the 24 hours. At present working is suspended on Sunday nights.

So far as the design of the yard is concerned, this is basically good but operation has shown that more reception sidings could be used with advantage. Some changes of grade would also be advantageous. In operation, some of the problems are a combination of natural elements with conditions peculiar to the site. Strong winds in the area have caused difficulties with sand blown from the adjacent dunes. Special grass has been planted to prevent this.

On occasion wind pressure is so high that, even with both primary and secondary retarders left open, wagons will not roll sufficiently to reach their desired positions in the sorting sidings. There have also been instances when wagons have been blown along out of the sidings. With winds of certain direction and intensity working has had to be suspended because of lack of visibility. This has been due to dust and smoke from near-by industrial premises.

Despite the completeness of the mechanism for recording "rollability" of wagons, which are classified in 16 categories, and the sensitiveness of the retarders, difficulties have been experienced. A brake defect can interfere with the freedom of running and wagon examiners are now stationed in the reception sidings to locate troubles of this kind.

The weight-detectors, at the approach to each primary retarder, partly determine the pressure to be exerted by both primary and secondary retarders. When a cut of wagons comes over the hump the weight of the leading wagon is that passed to the retarding mechanism. Should the leading wagon be heavily-loaded and a subsequent wagon be empty, the pressure exerted by the retarder can force wheels up and off the rail. For this reason empty and lightly loaded tank wagons are not included in the same cut as a loaded tank wagon. There are restrictions on some wagons passing over the hump, which are determined by the clearance of the wagon above rail level. These wagons have to be shunted by a locomotive. Certain classes of locomotive are allowed to go over the hump.

Trains are pushed from the reception sidings at about 3 m.p.h. The diesel locomotives used on this work are fitted with speedometers graduated in stages of ·2 m.p.h. The light signals at the hump summit, which give "hump normal," "hump slow" and "stop" indications, are reproduced in the locomotive cab. The cab signalling is operated by superimposing an a.c. current of several hundred cycles per second over the normal d.c. track circuits. Inductor coils on the locomotive detect the a.c. current which is amplified and made to operate a miniature of the hump signal. Any changes in aspect are brought to the driver's attention by a short audible warning signal inside the cab. In addition the driver is in communication with the control tower by wireless telephone.

The large degree of automation which has been attained has involved much equipment, largely of a very ingenious kind. As an example, the operation of the retarders is a computation involving the rolling resistance of the wagon, the standage in the sorting siding, the curvature in the particular road, the wagon weight, and the speed. The satisfactory installation and operation of the equipment on such a large scale has produced a wealth of experience of great value in the automatic operation both of the yard at Margam and yards elsewhere. The equipment readily lends itself to adjustment and many of the lessons learnt in operation have been embodied by such means.

The Margam yard has done much to facilitate freight traffic operation over a large area and is a most important contribution to the modernisation of the Western Region.

Experience obtained at Margam has shown that the automatic control equipment results in better yard operation than is attainable by previous methods. It has also demonstrated that the greatest improvement in operation would be derived from more predictable behaviour of wagons. Standard "rollability," which could result from better wagons or better maintenance, would assist in overcoming this difficulty. This in turn would lead to more efficient yard operation and yet speedier handling of traffic.

Outlook for British Railways

BY A CORRESPONDENT

IT is to be feared that the results of British Railways during the first half of 1961 are going to be disappointing. In four weeks to May 21 the railways originated 255,000 fewer tons of freight train traffic than in 1960. The decrease in merchandise was 89,000 tons, or 2·8 per cent, and in minerals 346,000 tons, or 7·3 per cent. For the first time this year there was a rise in coal and coke of 180,000 tons or 1·6 per cent. The recent policy of the National Coal Board increased output in the North Eastern Region by 361,000 tons to 16·6 million tons during 20 weeks to May 21 and entailed the working of 19,968,000, or 4·5 per cent, extra coal ton-miles.

Another striking feature in the same period was the movement of 169,000 additional tons of merchandise, nearly 16 per cent, in the Southern Region which worked 9,235,000 more ton-miles, or 7 per cent, in handling the goods. The Eastern Region also carried 119,000 more tons of merchandise (4·7 per cent) and turned out altogether 29,946,000 extra ton-miles (8·3 per cent) in consequence, while 100,000 more tons of merchandise originated in Scotland (5 per cent) and produced about 12 million ton-miles.

In contrast, the London Midland Region lost 1,183,000 tons of all classes of traffic during these 20 weeks and worked 96 million fewer ton-miles. These decreases of about 4 per cent were matched by the Western Region's loss of 630,000 tons, causing a reduction of close on 106 million ton-miles, over 7 per cent.

During the four-week period to May 21, receipts from freight train traffic declined by £440,000, or 2·4 per cent, to £19,631,000,

making the total decrease in freight revenue over 20 weeks £2,261,000, or 2·1 per cent. There was a further fall of £135,000 in the next four-week period to June 18, when a sharp drop in mineral receipts wiped out an unusual advance in coal dues.

Unfortunately, the upward trend in passenger-train receipts which prevailed until May 21, halted in the four-week period to June 18. Passenger receipts for that period were down £462,000, or 3·4 per cent, compared with 1960. That made the rate of increase over 24 weeks 5·9 per cent, against 8·4 per cent for 20 weeks to May 21. In the June period parcels receipts were £100,000 lower—a fall of 2·3 per cent, reducing the rise in the aggregate for 24 weeks to £71,000, or 0·2 per cent.

LETTERS TO THE EDITOR

THE EDITOR IS NOT RESPONSIBLE FOR THE OPINIONS OF CORRESPONDENTS

HIGH-PERFORMANCE LIGHTWEIGHT TRAINS

June 26

SIR, While agreeing with everything that your correspondent states in his article of June 23, the diesel installation shown in the diagram on page 710 seems to occupy too much of the car-body space. Why not use an underfloor-mounted "flat 12" engine similar to the latest O.M.-Saurer or Fiat designs. A Paxman engine is suggested. The same cardan shaft drive could thus be used, with one large motor similarly situated, in the electric version.

The driving cab gangway problem has also been solved, I believe, by the Italians.

Yours faithfully,

JOHN RODGERS

132, Worrin Road, Shenfield,
Brentwood, Essex

"THE RAILWAY POLICEMAN"

July 5

SIR, In view of the comments in your June 30 issue on my recently published book, "The Railway Policeman," I feel that, if only in fairness to those in official positions who have given me valued assistance and information in connection with my work, I should request a few more inches of your valuable space to make some comments of my own.

The book is intended as a tribute to, and an account of, the railway police, as well as a serious, if undistinguished, contribution to the cause in general of crime prevention and public order; but *The Railway Gazette* seems to have transformed it into some kind of "penny dreadful." Since my emphasis throughout has been on the gallantry and devotion to duty of the police, I find contemptible the implication that I have somehow made heroes of the criminals and played down the work of the former.

As the book deals entirely with the work and history of the British Transport Police, I can only assume your remark that you still await such a book to have been intended as a deliberate insult. In any event, since it has taken the 130 years of the existence of railway police in this country for anyone, apparently, to write a book about them, I predict, for the benefit of your reviewer, that he will wait in vain for a further volume on the subject during his lifetime.

The book, in fact, contains, as anyone who has taken the trouble to read it properly will know, a wealth of information, based on many hours of research, on the history of railway police, and as full an account of their work and organisation as, in my opinion, any police force would allow, in the interests of security, to be published for general readership.

For the kinder remarks in your article, I thank you.

Yours faithfully,

J. R. WHITBREAD

Westminster, S.W.1

[It was not our intention to suggest that Mr. Whitbread's book was in any way related to a "penny dreadful," but to indicate that it was far more than a dull and factual recitation of the organisation and development of the railway police force, the interest in which necessarily would be to a very small circle of readers. Probably the presentment of these facts and figures would have occupied a far smaller space than that taken by Mr. Whitbread's book, but it would not have been nearly so readable or entertaining and would not have had such a wide appeal as the able and interesting work which has resulted from the very considerable research that he must have carried out.—ED., *R.G.*]

WHY BOAT TRAINS?

June 26

SIR, The letter from Sir Guy Harrison in *The Railway Gazette* of June 23, says that it is unforgivable to refer to a ship or a vessel as a boat.

I suggest that the word vessel applies equally to a coracle or the *Queen Mary*, and anything between.

With regard to the word "boat," language is always gradually changing the meaning of words but, in pre-steam days, the ships sailing across the channel were described as packet-boats, and thus, when railways came on the scene, the description "boat-trains" was an apt and popular title.

How fortunate it was that this designation was not altered to "steamer trains," as this would have caused adverse comment when diesel propulsion was introduced.

Before deciding on the title for the book "English Channel Packet-Boats," the co-author and myself gave this very question considerable thought.

Yours faithfully,

CUTHBERT GRASEMANN

8, Napier Court,
London, S.W.6

RAIL FARES

July 6

SIR, I have read with interest your editorial notes on page 697 of *The Railway Gazette*, dated June 23, regarding the impending fares increases. As a railway student, I fully appreciate the case for bringing rail prices in line with rail costs, and if the railways held a transport monopoly this would seem to be a reasonable attitude. However, as no such monopoly exists, one can hardly expect the man in the street to be interested in railway economics. All he knows is that he has to pay to be transported from A to B, and if "Blank's Super Coaches" can take him from, say, Sheffield to Blackpool and back for about 20s. less than the railway, then with typical Yorkshire consideration for "brass," he not unnaturally clamours for what he considers to be the better bargain. I was in conversation with someone from Sheffield last week, who actually quoted the foregoing example, but such instances are not confined to Yorkshire.

With regard to the private motorist, it may be as cheap, or possibly a little cheaper, for a single passenger to travel by rail instead of by car, but when one considers that a party of four can travel by car for practically the same cost as one, then this is another factor which has to be taken into consideration. This causes one to wonder whether "concessionary family fares" could not be offered, similar to the concession of this nature which exists in connection with the "All Line Rail Rover Ticket." Incidentally, the British Transport Commis-

sion already holds permission to increase fares to a ceiling of 3d. a mile, so it would seem that it decided to "soft pedal" somewhat, by restricting the forthcoming increase to ¼d. a mile, making a total fare of 2¾d. a mile.

The writer can just remember the economic depression of the early 1930's, when the railways were on their beam-ends, and decided to offer "Summer Return Tickets" at 1d. a mile. These were so successful that they were retained through the ensuing winter, and subsequently formed the basis of the "Monthly Return Tickets" (single fare plus one-third), which were in operation until a few years after the war, when they were abolished. At the same time, single fares were reduced, and ordinary return tickets, (valid for three months) were issued at twice the single fare. It is not suggested that we should revert to 1d. a mile, but when one considers that the alternative forms of transport now available are much more intensified than in the early 1930's, it seems obvious that the continual raising of fares will not achieve the desired financial result, as each increase only tends to induce more passengers to seek alternative means of transport at what they feel to be a reasonable cost.

I would again emphasise that I myself always travel by rail, and fully appreciate the difficulties under which the railways are working. I realise that, taking into account their colossal overhead costs, we do indeed get value for our money. I also feel that it will never be possible to convince the general public of this while so many cheaper means of transport are at their disposal (public and otherwise).

If only British Railways would make an all-out commercial effort at competitive prices, something might be achieved. It is no use acting as if it still held the monopoly which it enjoyed 50 years ago.

Yours faithfully,

C. J. CLARK,
Railway Development Association (Midland Area)

24, Cromwell Street,
Gainsborough, Lincolnshire

HELP FOR TICKET AGENTS

July 7

SIR, I was interested to read, in your issue of June 30, editorial comment which praised a recent innovation of the Eastern Region Line Traffic Managers (Great Northern and Great Eastern) by which ticket agents are prompted of existing or amended traffic instructions by means of a special bulletin.

I thought you would like to know that it has been the practice of the Western Region for a number of years to extract from our Stations Weekly General Instructions Circular the particular items of interest to accredited ticket agents and to transmit this information to the agents by means of a special weekly circular.

Yours faithfully,

C. J. RIDER,
Public Relations & Publicity Officer

British Railways, Western Region,
Paddington, W.2

LONDON TRANSPORT STOCK

July 7

SIR, We refer you to the article on pages 736-9 of *The Railway Gazette*, dated June 30, as we feel that the reference in the list of contractors under the heading of windows is a little misleading.

It could be that Hallam, Sleigh & Cheston Limited is supplying the inside windows adjacent to the sliding doors, but we ourselves have provided the majority of window equipment and also the sliding-door runners.

In the case of the 248 Metropolitan cars for Amersham, i.e., the A60 stock, and also in the case of the 216 cars for Uxbridge, i.e., the A62 stock, we are providing the following:—

(1) Beclatite glazing rubber for all end fixed windows ;
(2) Beclatite glazing rubber for all fixed bodyside windows ;
(3) Beclatite glazing rubber for sliding-door windows ;
(4) Beclatite glazing rubber for internal windscreens adjacent to door openings ;
(5) Beclawat Solano full-drop windows for inter-communicating doors, of which there are 1 per car in the case of the motor cars, and 2 per car in the case of the trailers ;
(6) Beclawat weatherproof full-drop windows for drivers' cabs, of which there are 2 per motor car ;
(7) Beclawat heavy-duty ball-race runners for all sliding doors of which there are 10 for each motor car and 12 for each trailer.

Beclatite glazing rubber has been used on all London Transport Executive carriage stock built since the war and, including those cars at present on order, a total of 2,124 carriages will have had the bodyside windows glazed with Beclatite glazing rubber.

Beclawat Solano windows have been used for the inter-communicating doors of all carriage stock built since the war.

This surface stock is the first to be fitted with Beclawat weatherproof full-drop windows for the driver's cab.

These windows are rather similar to those that we supply for British Railways hinged doors, but in this case the balancing mechanism is provided by Tensator constant-force springs.

Although the weatherproof windows are not fitted to the Tube stock, Beclawat Railok windows have been used for the motorman's cab doors of these cars since 1956.

The Beclawat sliding-door equipment has never been fitted to the tube stock of the L.T.E. because of the impracticability of hanging these special-shape doors from the top. Nor has Beclawat sliding-door equipment been used for the surface stock until now, and the A60 and A62 stock will be the first to be equipped in this way.

The decision to change to Beclawat runners with nylon rollers was taken only after extensive and severe tests had been carried out at Bollo Lane works to prove that no faults would be likely to occur within a period of at least four years. In fact, after more than a million cycles of operation under test the nylon rollers showed no appreciable variations in diameter.

Yours faithfully,

J. R. GRIMSDELL,
Director, Railway Division

Beckett, Laycock & Watkinson Limited,
Acton Lane, London, N.W.10

PRESERVATION OF WELSH HIGHLAND RAILWAY

July 7

SIR, A group of railway enthusiasts under the leadership of Mr. R. G. Honychurch, of Shrewsbury, is proposing to form a preservation society with a view to restoring a section of the old Welsh Highland Railway.

This line, of 1-ft. 11½-in. gauge and 23 miles in length, used to run from Portmadoc to Dinas, near Caernarvon, through some of the finest scenery in North Wales. All traffic ceased in June, 1937. The line was dismantled for scrap in 1941, and all equipment broken up, sold, or transferred to other narrow-gauge railways.

It is proposed in the first instance to re-lay a three-mile section of track between Beddgelert and Nantmor. To do this, and to obtain the necessary equipment, including a locomotive (preferably steam) and one coach, will probably require at least two years' work.

Encouraging support has been promised to the organisers so far, but more support is needed, and if any of your readers are interested and would like to write to me at the address given below, I shall be very pleased to send them further details.

Yours faithfully,

G. S. CHADWICK

19, Weybridge Park,
Weybridge, Surrey

The Scrap Heap

Prairie flyer

Seventy-five years ago, on June 28, 1886, a 10-car train made up of first-class coaches, a dining car and two sleeping cars, each equipped with tub baths, left Montreal's old Dalhousie Square Station. Five days and 19 hours later this train, the first passenger train to cross Canada over the newly-completed Canadian Pacific Railway, reached Port Moody on the shores of the Pacific. Canada's first transcontinental passenger train attracted more than merely Canadian attention. *St. James Gazette* compared the new Canadian Pacific line with the Suez Canal.

50 years ago

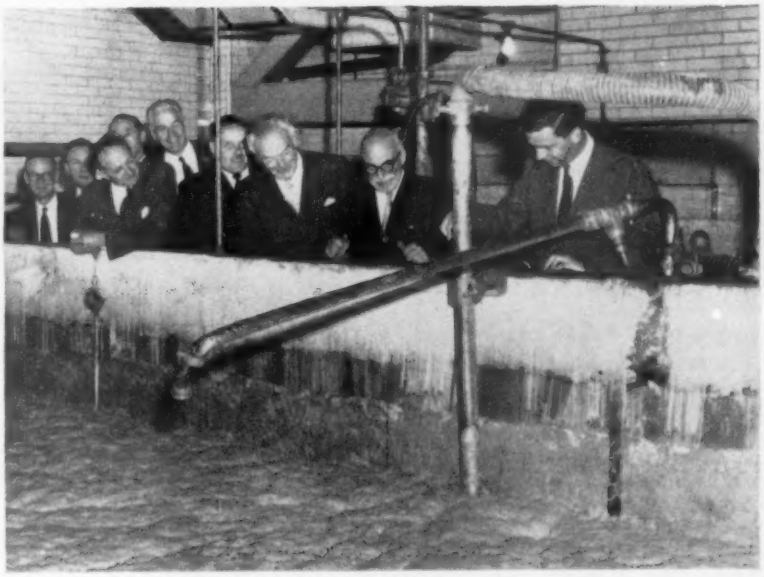
A passenger travelling last January from Paris to Havre found the coach unheated. He complained at the next stop but nothing was done. In his rage he pulled the communication cord and eventually appeared in court for his "outrageous conduct." The court found his action justified since he was in imminent danger of freezing to death.—From *The Railway Gazette*, July 14, 1911.

"We will fight . . . on the beaches . . ."

Speaking at the annual conference of the National Union of Railwaymen in Edinburgh on July 4, a restaurant car attendant expressed his concern about the effects of decentralisation on the catering and hotels division of British Railways. The London sandwich depot had the most modern complicated equipment which made sandwiches "by day and night; by the hundreds; by the thousands; the hundred thousands; by the millions." Were we to see things like this completely upset because the railways had to go back to a regional basis and come under separate managements ? Were we to go back to the days when the manager of every railway refreshment room was responsible for cutting his own sandwiches ? The resolution, which was unanimously approved, urged the national executive committee to take all possible steps to oppose the proposals in the White Paper. Editorial reference is made to this item on page 33.

No jam in that sandwich

Sandwich Town Council has protested that British Railways are reluctant to take seriously its complaint of traffic congestion caused by the frequent closure of level-crossing gates surrounding the town. It wants the railways to remedy the jams by improved traffic management.—*The Evening News.*



Mr. George Dodson-Wells and party at Horselydown Brewery

Consumer appeal

One evening recently, Courage & Barclay Limited showed a party of British Transport Advertising staff over its Horselydown Brewery near Tower Bridge, London. Illustrated on this page are Mr. H. Whitwell, Public Relations Officer for Courage & Barclay Limited (right), showing how the surplus yeast is taken off the beer when it has finished fermenting to (left to right) Mr. E. J. Mead, Mr. G. Yeldham, Mr. D. Herbert (partly hidden), Mr. E. Moorey, Mr. W. J. Oliver, Mr. J. E. S. Paterson, Mr. George Dodson-Wells, and Mr. M. N. Cretin.

Opinion

According to Lord Altrincham, "Over long distances trains are still best . . . ideally they can move with an economy of time, and a freedom from bumps, jerks, and violent oscillation that a car is powerless to achieve. Railways have a directness which even Roman roads could hardly rival . . . reading, writing, eating, drinking, and perhaps the best sleeping known to man, are among the blessings that a good train can offer." But "Some of their engine-drivers seem to think that a train journey should . . . feel like a ride on the dodgems. Some of their porters, when a night train is standing in a station, play what sounds like a gargantuan game of skittles with all the available milkcans. Dirt is ubiquitous and deeply encrusted . . . punctuality is no longer a requirement . . . but has become a much-admired, scarcely-attainable virtue—like chastity." Refreshments on British Railways are of "execrable quality." On a painful occasion a child smeared his book with a "glutinous sweet extracted from his mouth." All young children should be confined in "nurseries-on-wheels." But, despite the disadvantages, "cars represent our futile and superficial dalliance with the notion of free will," whereas trains appeal to us at "a deeper philosophical level."—Condensed from *The Guardian*, June 29.

Room at the top

Eight young railway employees will attend the first senior course at the "Outward Bound" Mountain School situated in the Chimanimani Mountains near Melsetter, from July 2-25. In keeping with the requirements of the School, four Europeans and four Africans have been selected. Seven are stationed in Bulawayo and one in Salisbury. The course entails a programme of mountaineering, rock-climbing, mountain rescue and above all the teaching of resourcefulness, self-reliance and self-discipline. Every day opens with a plunge in an icy mountain stream, a requirement which the Railway candidates accepted with good humour.

OVERSEAS RAILWAY AFFAIRS

FROM OUR CORRESPONDENTS

ITALY

Higher fares and goods rates

As from July 1, passenger fares on the Italian State Railways were increased by 15 per cent, and goods rates, excluding those for fruit and vegetables, by 10 per cent.

SPAIN

Remodelling of Burgos Junction

Extensive remodelling of Burgos Junction begun in 1954 was recently inaugurated. It is suitable for handling the traffic of three converging main lines, Madrid-Hendaye, Santander-Mediterranean, and Madrid-Burgos direct, when these are completed. Four roofed platforms, each about 1,000 ft. long, will have been built. Roofing is of modern reinforced-concrete design with cylindrical columns, and there are two subways.

Ancillary works include the construction of an overbridge carrying Hospicio Avenue and consisting of three concrete spans 26 ft., 39 ft., and 24 ft. in length. A circular locomotive shed, several new buildings and smaller bridges, an extensive signalling and interlocking works have been undertaken. The cost of the whole project is 83 million pesetas.

SWAZILAND

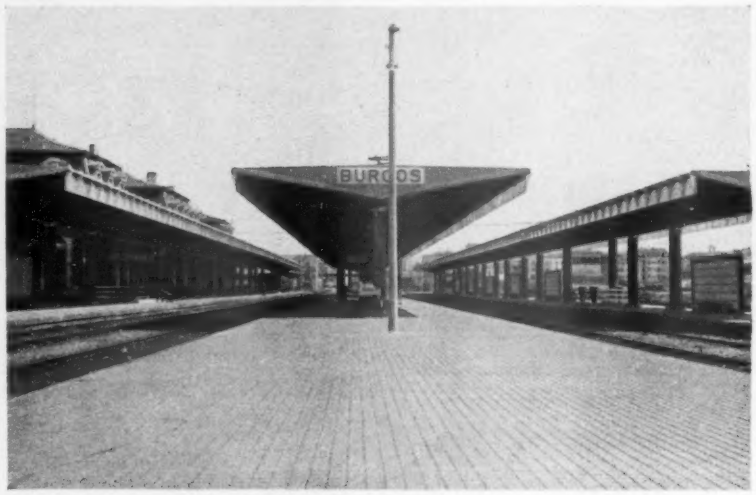
Iron-ore line

Reports from Johannesburg state that the British Government has agreed in principle to the construction of a 200-mile railway in Swaziland at a cost of about £8 million. It is to carry iron ore from the South African deposits at Bomvu Ridge across the Transvaal border to link up with the line to be built by the Portuguese to Lourenco Marques. The ore is to be supplied to a Japanese steel combine guaranteeing to buy up to 1,200,000 tons a year for ten years from 1964.

SOUTH AFRICA

More attractive rail journeys

South African Railways is making special efforts to ensure more attractive long-distance travel by providing faster trains, more comfort, cleanliness, improved dining-car service and better attention for passengers. The latest improvement is the provision on certain main-line trains of air-conditioned lounge or observation cars in which passengers can spend many hours of a journey. Four of these cars have been built for the Johannesburg-Cape Town and Johannesburg-Durban runs. Amenities include wall-to-wall carpeting, upholstered easy chairs, an attractive interior décor, and a cocktail bar. Another improvement will be 112 new main-line steel coaches now on order to be built locally. Each compartment will have hot and cold water and each coach will have a hot and cold shower.



View of the remodelled Burgos Junction Station

AUSTRALIA

Interstate sleeping cars

Two types of air-conditioned sleeping car, roomette and twinette, have been designed for interstate services between Sydney and Brisbane and, in 1962, Sydney and Melbourne. The roomette type of car has 28 single-berth compartments; the berths, longitudinal to the car, fold back to provide seats. At one end of the car hot and cold showers are installed. The twinette type has 20 sleeping berths in 10 two-berth compartments. A shower and toilet adjoins each compartment. A *de luxe* edition of the twinette for the Sydney-Melbourne service has 18 berths, and in its centre is a bed-sitting room with armchairs. At one end of the vehicle are two family units each consisting of two twinette compartments with a connecting door between. At the other end are four twinette compartments. For the Sydney-Melbourne standard-gauge service two new air-conditioned trains are being built; each will consist of 10 sleeping cars—five roomette and five twinette—one of the *de luxe* type. These cars each weigh 45 tons and are 75 ft. in length.

NEW SOUTH WALES

First Australian-built Budd cars

The first Australian-built Budd diesel railcars were recently introduced on the New South Wales Government Railways. They are the products of the Commonwealth Engineering Co. Ltd. of Granville, N.S.W., Budd licensees in Australia. They are being worked as a *de-luxe*, stainless-steel, air-conditioned train in fast commuter and express services on the Wollongong and Nowra coastal line southward from Sydney. Of typical Budd American design, they are capable of speeds up to 80 m.p.h. and are fitted with disc brakes. There is considerable standardisation with components already in use on N.S.W. and other Australian railways.

Each car is 77 ft. in length, 14 ft. in height and 9 ft. 9 in. wide, and has an open central aisle, two lavatories at diagonally - opposite corners, each opposite a luggage compartment. Two of the five cars seat 72 second-class passengers, and two powered cars seat 60, being of composite design with a 9-ft. guard's and luggage compartment. The fifth car is provided with a kitchen, and

seats 50 first-class passengers; it has an attendants' compartment at one end. A side-corridor past this compartment and the galley completes communication throughout the train. Except for two mild-steel end units, each car is an integral load-carrying welded austenitic stainless-steel structure, the sheeting being of ⅛-in. thickness.

The powered cars have General Motors inclined 6-110 diesel engines each developing 300 h.p. at 2,000 r.p.m. and enclosed in casing under the car floor. Transmission is of the Budd-Allison hydraulic type.

VICTORIA

Improved train services

Faster schedules of long-distance trains on the Albury, Adelaide, and Swan Hill lines of Victorian Railways came in force on May 1. This improvement in country train services has been made possible by increased use of diesel locomotives and by an extensive re-laying programme. The acceleration in the timetables of many trains was part of an overall programme to improve the services, the timetables of which are constantly being examined. In recent years, air-conditioned carriages, both first and second class, have been introduced on all main lines.

BRAZIL

Diesel-electric locomotives from U.S.A.

Two General Electric U8B metre-gauge diesel-electric locomotives have undergone trials before shipment to Brazil, where they will be used for passenger and freight services on the Leopoldina Railway. They are the first engines completed against a $23·5 million (£8·4 million) order for 180 locomotives for eight Brazilian railways recently. The locomotives will be built by the General Electric Company at Erie, Pennsylvania. The order is believed to be the largest ever placed by a national railway administration.

INDIA

Increasing capacity

At a meeting on April 29 between the Railway Board and the General Managers of Indian Railways, there was an urgent demand for the increase of line capacity on various routes. Highest priority is to be given to the doubling of certain sections of line already undertaken or programmed, and it was decided that trains of up to 3,600 tons—already worked on some sections by two-unit diesels—should be worked by double-headed steam traction wherever possible.

Production of electric multiple-units

In compliance with an order placed by the Railway Board on behalf of the Calcutta Electrification Project, the integral coach factory, Perambur, Madras, has undertaken a new line of construction of electric multiple-unit coaches. It will turn out 64 E.M.U. coaches in four-unit sets at a cost of £11,250,000.

MIDDLE EAST

Hejaz Railway to be restored

The Hejaz Railway between Damascus and Medina through Syria, Jordan, and Saudi Arabia, is to be rebuilt at a cost of about £7 million by the German company of Kurt Becker.

PUBLICATIONS RECEIVED

Talking about Wards. A 32-page booklet with many illustrations, published by Thos. W. Ward Limited, Albion Works, Sheffield. It outlines the many activities of the companies in the Ward group. Copies are available to past and prospective customers.

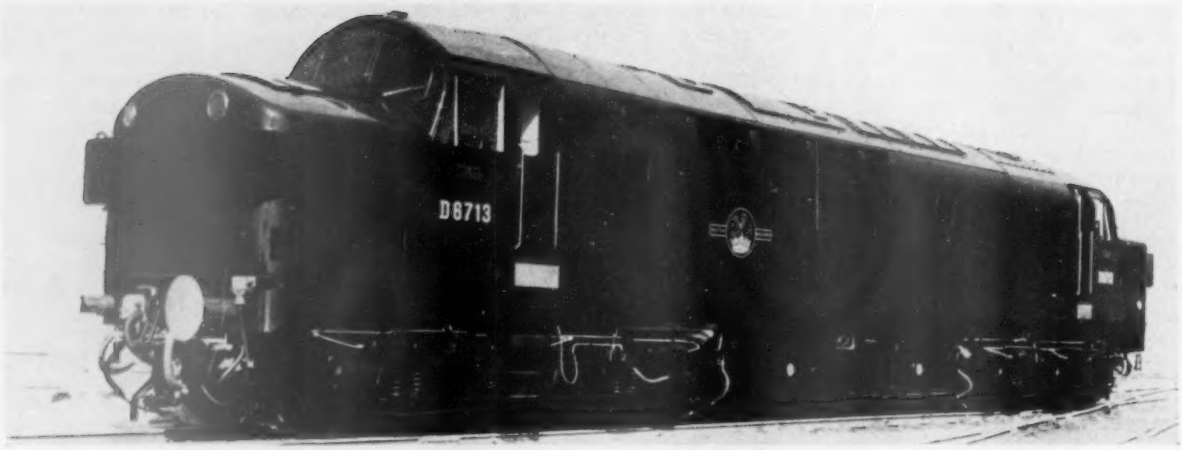
Castings. A brochure has been issued by Dialoy Limited, Colchester Factory Estate, Cardiff, which illustrates recently-produced castings. Among these are components in aluminium, bronze and brass, for a wide range of applications, including railway work.

Silicones in Electronics. This booklet, issued by Midland Silicones Limited, 68 Knightsbridge, London, S.W.1, describes and illustrates some of the widespread uses of silicones in electronic equipment. The booklet is divided into three main sections: the first deals with encapsulating, impregnating, filling and coating materials; the second with fabricated insulating and structural components; and the third with production aids.

Drewry Railcars & Locomotives. A folder, issued by the Drewry Car Co., Ltd., 129 Finsbury Pavement, London, E.C.2, showing representative examples of railcars and locomotives supplied to railways and industrial undertakings both at home and overseas. This gives a good overall picture of the company's products and illustrates the wide variety of the designs which have been evolved for varying service requirements. Drewry railcars are supplied for single and multiple working, with underfloor engines and with either mechanical or hydraulic transmission. Locomotives range from 100 to 350 h.p., for all gauges and duties. A Spanish edition of this publication is also available.

British Steam Railways. By O. S. Nock, London, Adam & Charles Black Limited, Soho Square, W.1. 9½ in. x 6½ in. 326 pp. Price 42s. Illustrated, including eight plates in colour. The subject is a vast one, dealing in fact with most of British railways history and the author has treated it in a series of essays on the major aspects of railways from relatively early times. The growth of the system, increased comfort, higher speeds, locomotive development, and all that these facets involved are among the topics enlarged upon. A feature of the book is the plates, some of which are reproduced in colours which do not quite agree with the liveries of the railways concerned. Many photographs are reproduced and there are numerous line drawings, of such subjects as signals and brake vans. It is refreshing to encounter these for, while many items have been repeated *ad nauseam* in the spate of railway books of recent years, there are still many features upon which very little—if any—information is generally available. The impression created by the book is that much that was done on railways in years gone by was both functional and beautiful. In an age when function has triumphed to the virtual exclusion of beauty, many stations when receiving long-overdue overhauls would benefit far more by restoration to their original condition than by attempts to modernise them. As the author points out in his preface the book is not a technical one but conveys something of what railways were like and what the ordinary traveller saw. Emphasis has been on colour, diversity, the picturesque, and the curious and that emphasis is on much of the story before the first world war.

"Passengers' Guide" to London Transport. To help overseas visitors, London Transport has just published "Passengers' Guide" booklets explaining the working of the London bus and Underground systems in French and German. The information given in the 12-page booklets includes explanations of the various types of London Transport services and the fares system, bus-stop signs, cheap-ticket facilities, advice on the use of travel maps and directional signs on the Underground. The booklet also contains details of bus and Underground routes to principal places of tourist interest.



British Railways type 3 diesel-electric Co-Co locomotives now entering service on the Eastern Region

TYPE 3 LOCOMOTIVE for British Railways

Mixed-traffic diesel-electric locomotives powered by 1,750-h.p. charge-cooled slow-running engine

DELIVERIES are now proceeding to the Eastern Region of British Railways of English Electric Type 3 diesel-electric locomotives. A total of 79 of these locomotives, which are being built by the Vulcan Foundry Limited have been ordered. Suitable for both mixed traffic and express passenger service, the top speed is 90 m.p.h. Service weight, including train-heating boiler and 800 gal. of water, is 103 tons.

Design is of the double cab layout, and provision has been made for multiple-unit coupling with other English Electric locomotives of types 1, 2, and 4, for British Railways and with the majority of other makes. The power unit is the English Electric 12-cylinder vee engine rated at 1,750 h.p. at 850 r.p.m.

Leading particulars and dimensions are as follow :—

Wheel arrangement	Co-Co
Weight in working order (adhesive)	103 tons
Maximum axle-load	17·8 tons
Maximum service speed	90 m.p.h.
Maximum tractive effort	55,500 lb.
Continuous rated tractive effort	35,000 lb. at 13·6 m.p.h.
	ft. in.
Overall length	61 6
Overall width	8 11⅛
Overall height	12 10½
Bogie centres	37 2
Bogie wheelbase	13 6
Wheel dia.	3 7
Fuel tank capacity	920 gal.
Boiler water tank capacity	800 gal.
Minimum curve negotiable	4 ch.

Equipment arrangement

In the nose compartment at No. 1 end are the airbrake compressor, air reservoirs and one traction motor blower. Air is drawn in through large oil-wetted filter panels in the bodysides. The cooling group is placed immediately behind the rear bulkhead of the cab at this end.

In the nose compartment at No. 2 end are two vacuum-brake exhausters and one traction motor blower. At this end of the power compartment the main electrical control cubicle is fitted as an integral part of the cab rear bulkhead. Between this cubicle and the main generator are the batteries on one side and the train-heating boiler on the other. All air drawn into the power compartment for the engine and generators is filtered through oil-wetted filter panels in the bodysides.

The fuel oil tank and boiler water tank are underslung from the frame between the bogies. Water-filling chutes are provided in the bodysides and dial gauges on each tank.

Cab and superstructure

A driving cab is provided at each end of the locomotive, with access doors behind the seat at each side. In the cab rear bulkhead is a door for entry to the engine compartment. Access to this compartment also may be obtained through a door in each side of the body.

Ahead of each cab is a nose compartment in which are accommodated the vestibule gangways and various auxiliaries. The superstructure side framing is prefabricated and attached to the underframe by welding. To provide access for maintenance, removable roof sections are fitted over the power unit, control cubicle, and train-heating boiler.

Adjustable upholstered seats are provided at each side of the cab for the driver and assistant, with the driving controls conveniently placed at each side of a knee-hole desk.

At the left are the vacuum and air-brake controls and to the right are the master controller and reverser.

The driving instruments and gauges are mounted on a panel at the back of the desk, and the fault-warning lamps and auxiliary switches are on the bulkhead. Forward of the assistant's seat is the handbrake wheel and control panel for the train-heating boiler.

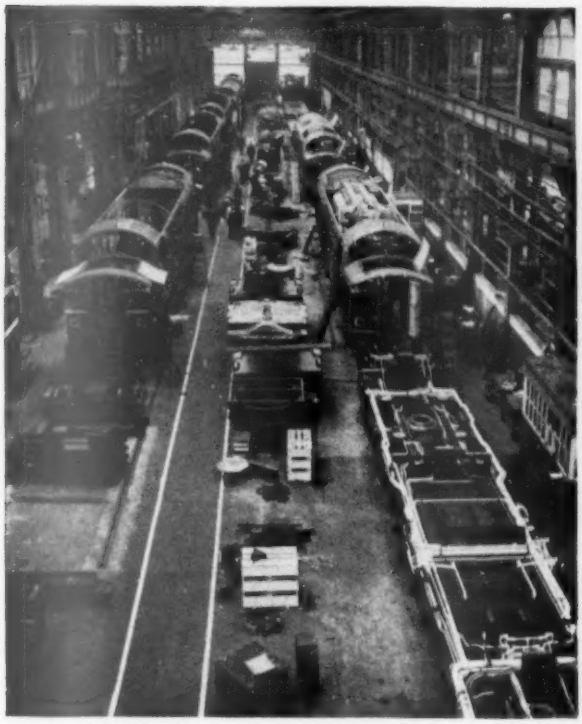
Driving screens are provided with demisters, windscreen wipers, and washers. Electric heaters having a combined capacity of 4½ kW. are installed for cab heating. An electric cooker is provided in No. 1 cab.

The English Electric type 12CSVT four-stroke cycle diesel engine is rated at 1,750 h.p. at 850 r.p.m. This is a 12-cylinder unit of 10-in. bore × 12-in. stroke, the cylinders being arranged in Vee formation.

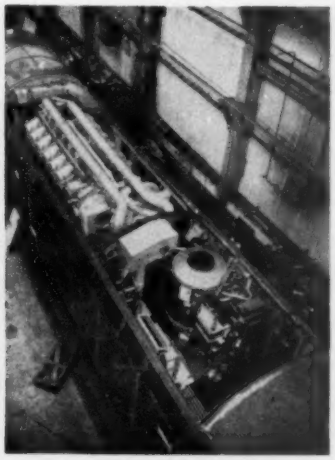
Supercharging

Supercharging is by two Napier exhaust gas driven turbo-blowers. One blower is used for each bank of cylinders and, after leaving the blower, the charge is cooled in an intercooler before delivery to the cylinders. Lubricating oil priming and fuel oil transfer is by motor-driven pumps.

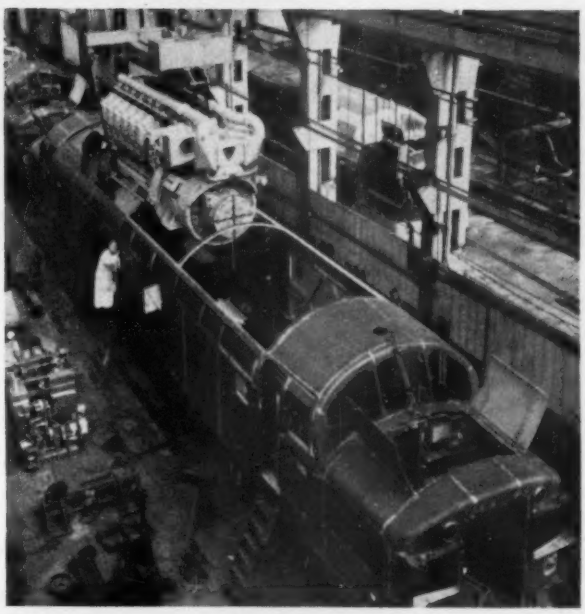
Engine starting is by motoring the main generator from the battery. Fault



Locomotives under construction



(Left): installation of 12-cylinder vee-engine train-heating boiler and auxiliary equipment



(Right): lowering power unit into locomotive under construction

(Bottom left): driving position is arranged with minimum of controls and instruments

(Bottom right): interior of driver's cab

protection equipment is fitted to cover low oil pressure, low fuel level, and high water temperature. Thermostatic temperature controls are incorporated in the cooling water circuit.

The main generator is flange-mounted to the engine, and the combined power unit is installed in the locomotive on resilient mountings. This isolates the unit from any flexing of the bedplate and facilitates installation and removal.

Cooling is provided by pairs of radiator panels mounted one behind the other on each side of the locomotive. The outer panels cool the water circulating in the charge-air coolers and engine lubricating oil cooler. The two inner panels are for engine jacket and turbo-blower water cooling. Shutters controlled by a lever in the engine compartment are fitted outside the panels. The radiator fan is roof-mounted and driven from the free end of the engine. A right-angle gearbox is used and, in addition to the flexible couplings of the drive shafts, there is a centrifugal clutch in the vertical shaft to cushion the drive during speed changes.

Electrical equipment

The main generator is a self-ventilated, single-bearing d.c. machine having a continuous rating of 1,107 kW. at 850 r.p.m.

Windings include a series-field winding for motoring the generator when starting the engine. Power output is varied by control of the diesel engine speed and main generator field excitation. The auxiliary generator is overhung from the main generator. The d.c. output voltage of this machine is maintained constant at 110V. by a carbon pile voltage regulator. If power is required at a later date for electrical train-heating, a generator to supply this will be interposed between the main and auxiliary generators.

The six axle-hung nose-suspended traction motors are identical and interchangeable with the motors fitted on the English Electric 3,300 h.p. Type 5 locomotives. The motors are four-pole series-wound hung on roller bearing suspension units, and driving through single-reduction spur gearing. Field divert resistors are provided for weakening the field strength to suit the performance requirements. The three motors on each bogie are force-ventilated by the adjacent traction motor blower. Cooling air for two of the three motors is ducted through the hollow bogie centre and box-section bolster to flexible bellows connections at the commutator end of the motors. Air for the third motor is ducted through direct to the bellows connection.

Control arrangement

Actuated by the driver's master controller, the control circuits are energised by electro-pneumatic and electro-magnetic contactors and relays. Engine speed may be continuously varied from 450 to 850 r.p.m., loading on the engine being automatically adjusted by the load regulator. This is a hydraulically-driven vane motor operated by the governor from the engine oil pressure. By this means any given load demand is matched at the lowest possible engine speed.

The traction motors are connected in three parallel groups across the main generator, each group consisting of two traction motors in series. Wheel-slip protection circuits are included which automatically reduce tractive effort if wheel-slip occurs.

The bulk of the control gear is in a single cubicle which faces into No. 2 cab.

The underframe is made up of three sections fabricated together to form an integral unit, consisting of a centre section of two longitudinal joists supporting the power unit, fuel, and water tanks, and two identical outer sections of two fabricated members over the bogies. These are cross-connected by transoms to form the bogie pivot centres. The drag-boxes carry British Railways standard screw couplings and side buffers.

Equalised bogies

Bogies are of equalised type with swing bolsters. Superstructure load is carried on four side bearers on each bogie bolster, and transmitted through nests of coil springs to two spring planks suspended by swing links from the bogie frame. Dampers are fitted between the bolster and the spring plank. Coil springs distribute the load from the bogie solebars to equalising beams underslung in stirrups incorporated in the roller-bearing axleboxes.

Bogie frames are made up of fabricated box-section solebars connected by riveted transoms and headstocks. Manganese-steel liners are fitted to all wearing parts.

Brake equipment

The Westinghouse brake equipment is arranged for straight-air braking of the locomotive and for vacuum control of the airbrakes when hauling vacuum-brake stock. Air for brake operation is supplied by a motor-driven Worthington-Simpson type MSV38S compressor, this supply also being used for operation of the warning horns, sanding, and control gear.

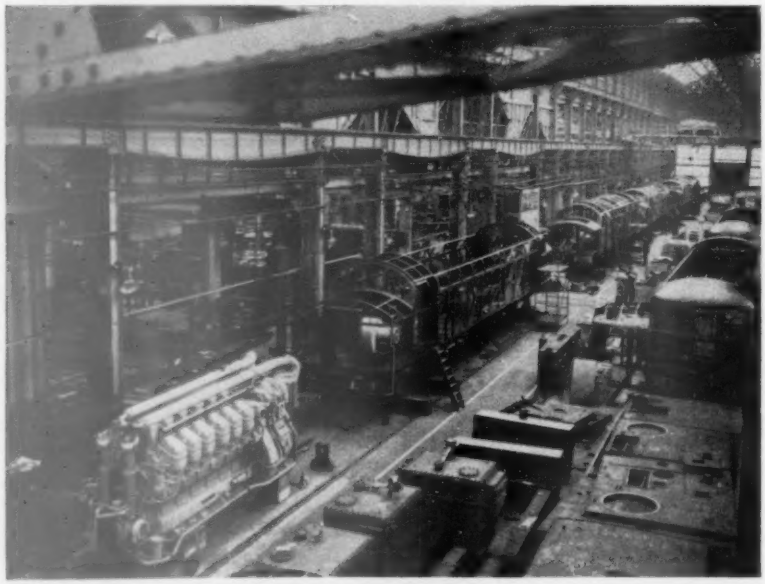
Operation of the train vacuum brakes is by two Northey 125RE motor-driven exhausters. For maintaining vacuum these run at 1,250 r.p.m., with provision for speeding up to 1,850 r.p.m. for quick brake release. British Railways A.W.S. equipment is fitted.

The train-heating boiler is a Clayton RO.2000 with a maximum output of 2,000 lb./hr. This is a self-contained, fully automatic oil-fired unit with burner modulating controls for the automatic control of steaming according to demand.

These locomotives were designed and are being built to the requirements of the British Transport Commission under the overall direction of Mr. J. F. Harrison, Chief Mechanical Engineer, and Mr. S. B. Warder, Chief Electrical Engineer, British Railways Central Staff, B.T.C.

Sub contractors for these locomotives include the following:—

Traction motor blower fans	Keith Blackman Limited
Batteries	D. P. Battery Co. Ltd.
Radiators	Spiral Tube & Components Co. Ltd.
Compressors	Worthington-Simpson Limited
Brake equipment ...	Westinghouse Brake & Signal Co. Ltd.
Exhausters	Northey Rotary Compressors Limited
Boilers	Vulcan Foundry Limited
Axleboxes	British Timken Division of the Timken Roller Bearing Company.



Type 3 diesel-electric Co-Co locomotives under construction

View of Smithy Lane Bridge looking south

MARSHALLING YARD AT LAMESLEY in the North Eastern Region

Representative of yards under construction, Lamesley incorporates problems likely to face civil engineers of many systems

by **H. C. STEEPLES,** *Assistant Civil Engineer (Modernisation), North Eastern Region, British Railways*

THE North Eastern Region's marshalling yard plan as outlined in *The Railway Gazette* of April 1, 1960, provides for four modern yards, one at Newport, near Middlesbrough, for Tees-side traffic; one at Lamesley, near Newcastle, for Tyneside and Wearside traffic; and two in the West Riding, the first at Healey Mills near Wakefield for East-West traffic, and the second at Stourton, near Leeds, for North-South traffic.

General construction pattern

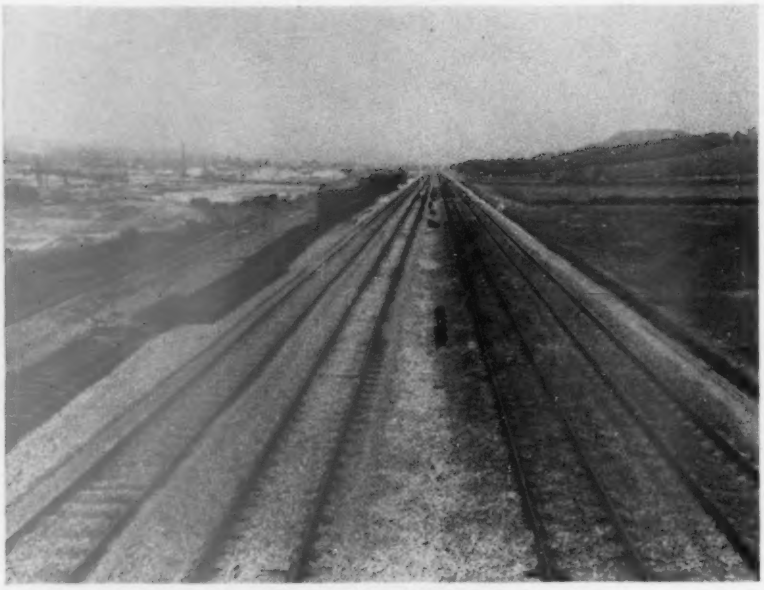
All these yards follow the same general pattern; they are all gravity, or hump, yards. Reduced to the simplest terms, they consist of reception sidings, a hump leading to primary and secondary retarders feeding into the main sorting sidings with facilities for staging and secondary sorting and finally to the departure sidings.

The yards are in various stages of construction. Newport is the most advanced, the Up yard being scheduled for operation before the end of 1961. Construction at Lamesley and Healey Mills is well in hand. Preliminary work commenced at Stourton in May this year.

This article deals particularly with Lamesley Yard and the engineering problems encountered, including the seeking of Parliamentary powers and the negotiations which had to be undertaken.

The main problem (and this applied to all the yards in the North Eastern Region and probably to the majority of yards in Britain) was to find a suitable site for the yard within the restricted area which would suit operating requirements. A modern yard generally occupies an area of approximately 125 to 150 acres, 2 miles long by ¼ mile wide. (The area required at Newport is 200 acres having an Up and Down yard each approximately equal in size to a major single yard.) Sites which were available and which would have been suitable 20 years ago have been used for industrial and other development.

In view of the great economies which follow the bringing into operation of the



View of the marshalling yard site

yards, their provision was treated as a matter of urgency and it is a cause for satisfaction that, although initial consideration was only given to the Lamesley scheme in mid-1958, approval in principle for the seeking of Parliamentary powers in the 1958-59 Bill was given in October, 1958, and full authority was received on July 21, 1959. Actual construction commenced in December, 1959.

Position of site

Lamesley marshalling yard is sited four miles south of Newcastle, close to the Team Valley Trading Estate, and is bounded on the east by the East Coast main line and, on the west, by the River Team.

The land was mainly agricultural but the scheme also affected Lamesley Station and cottage property, a sawmill, a brickworks, and a busy colliery wagonway with reservoirs and pump house. Three county roads crossed the site.

The main part of the land was owned by the National Coal Board and is subject to mining subsidence—ten coal seams being affected. Although these were all relatively shallow, the total subsidence expected was 7 ft. if all seams were worked. Subsidence of this magnitude could not be accepted and a pillar of support in all seams has been reserved.

To provide the width required for the yard it was necessary to divert the main lines eastward. The length of track involved was two miles, maximum shift being 50 yd., and the diversion resulted in an improved alignment. The River Team was diverted westward and realigned with the approval of the Northumberland & Tyneside River Board, suitable provision being made by the construction of weirs for maintaining existing hydraulic characteristics.

Before Parliamentary powers were obtained, negotiations proceeded with the Durham County Council in connection with the closing, diversion, and bridging of the roads crossing the site and full agreement was reached. The Planning Officer of the County Council was also consulted and various requirements regarding seeding of slopes, tree planting, use of existing colliery spoil heaps, and general preservation and improvement of existing amenities were agreed.

A total of 1,600,000 cu. yd. of filling was required to be imported in addition to 100,000 cu. yd. from cut and fill. As the diversion of the main line reduced the area of tipping available to the N.C.B. for run of mine spoil at a nearby colliery, agreement was reached with them that approximately 350,000 yd., equivalent to two years' output, would be taken by the Commission to compensate for this loss of tipping capacity.

Origin of filling

The opening-out of a 170-yd. tunnel at Corbridge on the Newcastle-Carlisle line is providing 300,000 cu. yd. of filling. A tip siding has been installed to receive this material, the maximum quantity dealt with being four trains of 30 wagons a day—approximately 1,000 tons.

From Newton Hall, near Durham, where provision is being made for future realignment of the main line to lift speed restrictions, approximately 220,000 cu. yd. of filling is being transported by road direct to the site.

The balance of the filling will be provided by red shale from adjacent colliery heaps and run of mine spoil as previously described. The run of mine spoil is placed in layers with inert material from Newton Hall to preclude any possibility of combustion. Special rates for this material were negotiated with the National Coal Board.

A summary of the filling required is given in the following table:—

Source	Cu. yd.
Red shale	550,000*
Corbridge	300,000
Newton Hall	220,000
Run of mine spoil	350,000
Filling other than red shale from local sources	180,000*
Total	1,600,000

*These two items are subject to variation (total remaining same) to meet availability

Two of the bridges as seen from Road C.5A

The main work in the first stage was the formation of the main-line embankment. To establish a satisfactory specification and method of construction for this, a test embankment in red shale was constructed using various methods of placing, depth of layer, compaction, and so on. The embankment was located for easy road access and in the final scheme will form part of the formation for the Down slow line.

Bridges

1. *Road C.5A bridges*

County Road C.5A, which is a busy main link from the A.1 to the Team Valley, was diverted to minimise bridging.

As a result, only five overbridges were required and the form of these was agreed with Durham County Council. To reduce the tunnel effect of a series of bridges close together, a three-span type was adopted, the outer spans replacing the normal solid abutments, and the whole of the substructure consisting of four sets of R.C. columns braced together to form piers. The outer two sets were buried by the spill from the ends of the approach embankments.

Two inclined R.C. struts were provided from the foundations of the inner columns to the top of the outer columns to prevent damage while the fill was being placed and to anchor the bridge superstructure effectively against all longitudinal forces.

The superstructure comprises universal beams with articulated joints in the outer spans to allow for any differential settlement on the clay sub-soil. So far, maximum settlement is of the order of 3 in.

The main-line bridge has concrete jack arches to reduce the construction depth. The remaining four bridges have transverse R.C. decks on top of, and acting composite with, the beams. The spans of the bridges vary with the skew to suit the various tracks. The two shorter square bridges, including that carrying the main line, have normal reinforced concrete slab foundations; the remaining three bridges are founded on groups of bored piles.

Bridge mountings

To provide for expansion and minimise transverse loads on the tops of the columns, these bridges were provided with rubber bearings on the centre piers. In the case of the main-line bridge, the thickness is 4 in. and the outer ends of the side spans were mounted on normal steel pedestal bearings. Check measurements made since the main-line bridge was brought in use have not revealed greater oscillatory movement in any direction with any type of traffic than $\frac{1}{64}$ in.

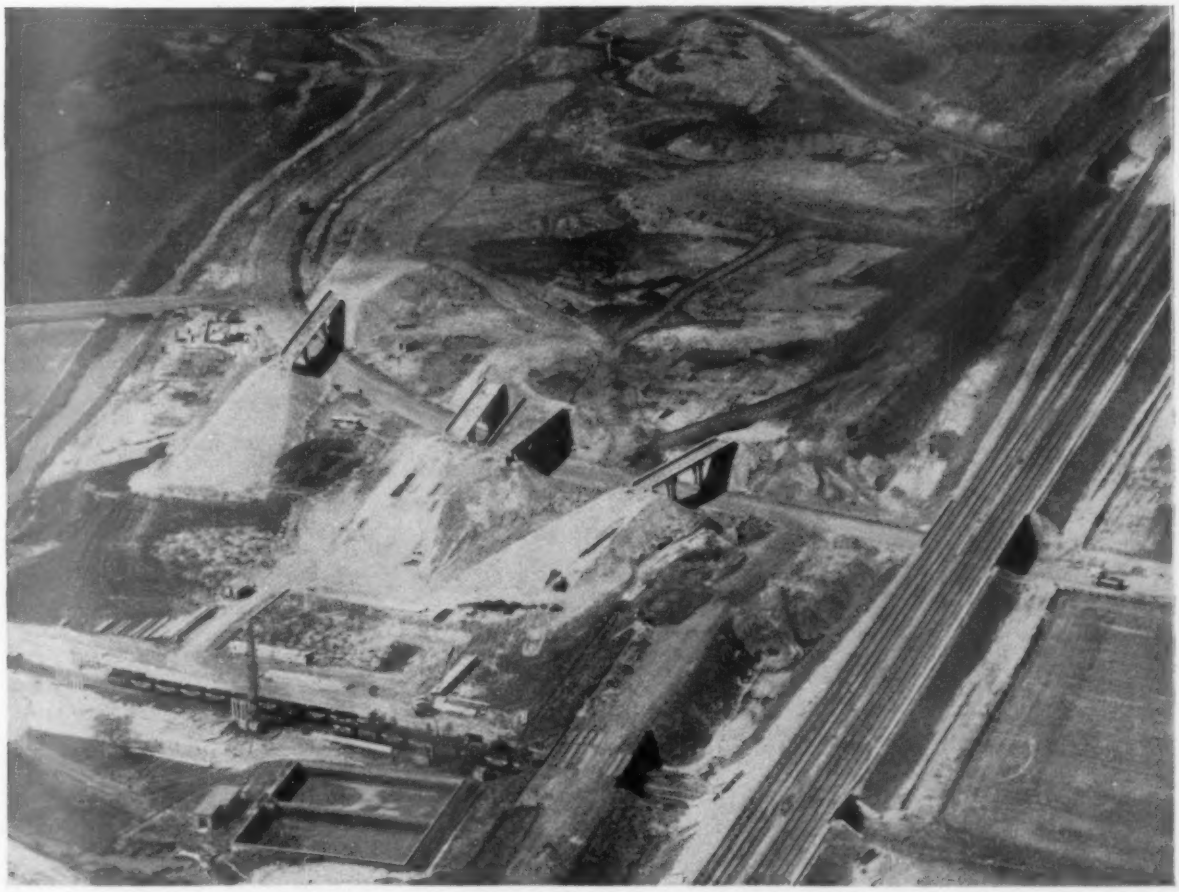
All these bridges were constructed in the open before the tipping of the embankments.

Road closed

During construction and including the diversion of the main lines carried out on October 17, 1960, it was necessary to close Road C.5A for seven weeks to build up the railway embankment over the old road, transfer main-line working, and cut a way through the old railway embankment for the road.

2. *Smithy Lane bridge*

The new bridge to carry Smithy Lane across the railway was built adjacent to the existing bridge with road diversions at each end. It consists of six main spans built on the cantilever and suspended span principle with two additional open spans at each end to contain the slope from the end of the road embankment. The total length of the superstructure is 435 ft. It is constructed of universal steel beams with a transverse reinforced concrete



Four bridges over Road C.5A looking north

deck and footpath cantilevered out on brackets on the south side.

The considerable expansion of a bridge of this length (+1½ in.) is catered for by a single toothcomb joint at the centre of the bridge. Although this is adequately waterproofed, longitudinal falls are provided both ways from a summit at the expansion joint to reduce the volume of rainwater flowing into the expansion joint. This bridge is also supported on rubber bearings except at its extreme ends to permit necessary longitudinal movement and to keep horizontal forces applied at the column tops to a minimum.

Plastic-panel parapet

The substructure consists of R.C. columns with flat-base foundations on clay throughout. The bridge has been designed to carry normal Highway Authority loading and complies with M.O.T. requirements for lines to be electrified. A new type of parapet consisting of press-moulded glass-fibre reinforced-plastic panels has been used for the first time. These panels are light and easily replaced if damaged and do not require painting. They weigh 20 lb. each and are 5 ft. 0½ in. long by 3 ft. 0 in. high and are coloured silver grey.

3. *Bowes Railway*

The National Coal Board colliery wagonway crosses the site and three new bridges were required to accommodate the layout.

To minimise disturbance to the operations of the wagonway, which is extensively used, the abutments have been formed with a line of pretensioned prestressed concrete piles placed before prestressed bearing piles. All these piles extend to 1 ft. below the bridge soffit and are built into a reinforced concrete member carrying the bearings for the deck beams and incorporating an end stop, the deck thus acting as a strut to the two abutments. To insulate these upstands from any effects of the rotation of the beam ends resulting from live load, a 1 in. thick x 9 in. wide rubber strip separates them and the ends of the beam.

The decks of these bridges, of 25 ft. 6 in. clear span, are formed with a standard proprietary section of pretensioned prestressed concrete beam with *in situ* concrete added to form a composite deck.

The parapets are special one-piece p.s.c. beams with galvanised steel handrailing from 1 ft. above rail level.

Considerable difficulty was experienced in obtaining the required bearing capacity of all the piles on this site.

The area is almost wholly covered with a glacial clay and, although extensive preliminary site investigation was carried out, pile resistances did not come up to expected values.

In the case of all the bored piles, which are incorporated in three of the C.5A bridges, an average of 5 ft. had to be added to the lengths to obtain satisfactory results. In the case of the Colliery Railway bridges, after it had been demonstrated that lengthening the piles by a steel sleeve from 45 ft. to 69 ft. still did not produce an adequate bearing capacity, a more economical design was produced.

Increased pile bearing

This consisted of digging a shallow trench 4 ft. 6 in. wide down to the level of the clay with the line of the bearing piles running down the middle. This was then back-filled with concrete 2-ft. thick with light longitudinal reinforcing bars. Effective shear connection between the piles and the concrete was provided by corrugations formed on three sides of the piles.

When tested with Kentledge, the bearing capacity of individual piles was found to have been increased by 100 per cent.

Before authorisation of the scheme, the Sunderland & South Shields Water Co. Ltd. possessed powers for an under-track crossing of the four-track railway by a pipeline from the Derwent Valley reservoir which is under construction. This envisaged twin 33¾-in. high pressure steel piles laid inside two 42-in. dia. steel sleeves installed by thrust boring.

Pipe-line crossing

As the main line at the site of the proposed crossing was to be diverted, agreement was reached with the water company with relation to the revised crossing required, and the Commission was able to construct a 9 ft. 3 in. x 6 ft. 4½ in. cross-section R.C. culvert for the company. The part carrying the diverted main lines was completed first. After diversion of the main line, that section of the culvert under the original tracks was undertaken and the water company now have a through way for a single 40-in. dia. steel pipe with room to install replacement sections.

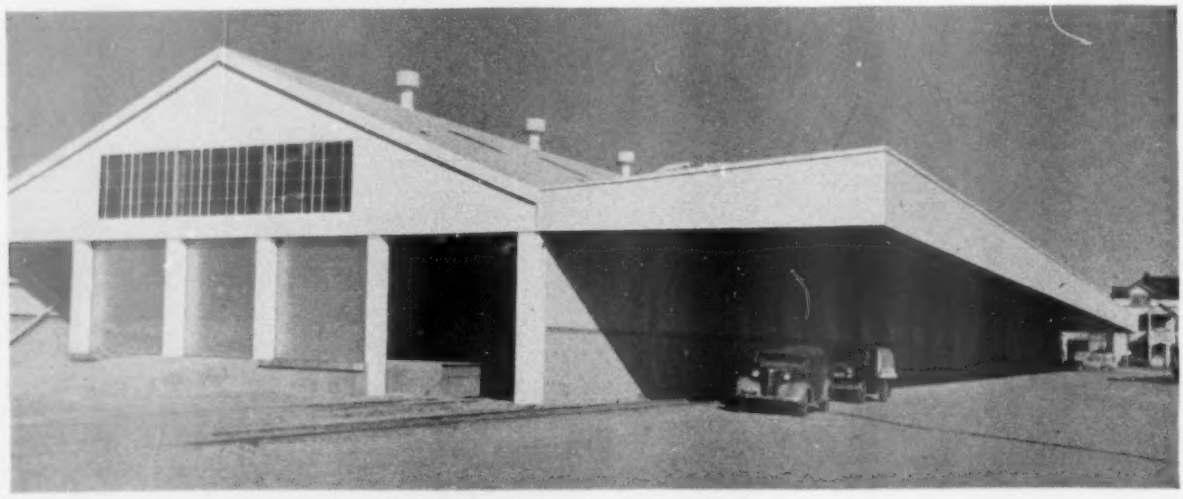
A subway under the Down slow line is provided to give access to the Yardmaster's office in the centre of the yard.

Because of the skew crossing of the access road underneath the railway, the subway has been designed as a tunnel with reinforced concrete floor and side walls and a top deck formed with pretensioned prestressed concrete beams and *in situ* added concrete.

Installation of the permanent way is well in hand.

Contracts for the signalling and retarder installation (which includes the provision of colour-light signalling on the main lines from Low Fell to Kimblesworth) have been let, and the yard is scheduled for full operation early in 1963.

GOODS HANDLING IN NEW ZEALAND



New tranship freight shed at Frankton, New Zealand's busiest railway junction

PERSONAL

Overseas

MR. A. D. MCDONALD, General Solicitor, and MR. L. COTE, Assistant General Solicitor, Canadian National Railways, have been appointed Counsels General.

The illustration at the foot of the page shows officers who attended a recent District Officers' conference held by the Chief Operating Superintendent and the Chief Commercial Superintendent of East African Railways & Harbours. Left to right (back row): MR. N. WHITTINGTON, Establishment Officer, Operating and Commercial Departments; MR. S. T. THOMAS, Assistant Traffic Superintendent (Research & Planning), Operating Department; MR. N. E. NORMAN, District Traffic Superintendent, Nakuru; MR. R. A. RAPLEY, Administrative Assistant, Commercial Department Headquarters; MR. J. J. S. DUNLOP, District Traffic Superintendent, Mwanza; MR. A. B. MCNABB, Assistant Traffic Superintendent, Commercial Department Headquarters. On the middle row: MR. R. B. MORRIS, District Traffic Superintendent, Nairobi; MR. J. W. WILLIAMS, Telecommunications Engineer, Operating Department; MR. J. CARR, Acting District Traffic Superintendent, Tanga; MR. H. P. A. JOHNSON, Acting District Traffic Superintendent, Tobora; MR. J. S. BOUMPHREY, Acting Rates Assistant, Commercial Department Headquarters; MR. P. G. BRICE, District Traffic Superintendent, Mombasa; MR. E. J. M. HAYWARD, Works Assistant, Operating Department; MR. K. H. MARSHALL, Administrative Assistant (Staff), Operating and Commercial Department. On the front row: MR. A. S. CORK, Senior Marine Engineer, Kisumu; MR. D. GOVER, Acting Operating Assistant, Operating Department Headquarters; MR. G. G. GEDDES, Assistant Chief Operating Superintendent; MR. R. M. L. LEMON, Chief Operating Superintendent; MR. J. H. COLLIER-WRIGHT, Chief Commercial Superintendent; MR. W. S. MORRISON, Principal Commercial Assistant; MR. J. N. MURRAY, District Traffic Superintendent, Dar es Salaam; and MR. J. B. MCQUEEN, District Traffic Superintendent, Kampala.

British Transport Commission

MR. J. HOWE, Design Consultant to the British Transport Commission, has been appointed Royal Designer for Industry by the Royal Society of Arts.

The British Transport Commission has announced that the designations of the following offices have been changed. MR. R. K. KERR, Assistant Solicitor to the Assistant Chief Solicitor; MR. J. A. BROUGHALL, Electrical Engineer (Development), to be Assistant Chief Electrical Engineer; MR. G. G. KIBBLEWHITE, Assistant (Rolling Stock Equipment), to be Assistant Electrical Engineer (Development); DR. F. T. BARWELL, Electric Traction Engineer (Research), to be Electrical Engineer (Research); DR. H. I. ANDREWS, Assistant Electric Traction Engineer (Research) to be Assistant Electrical Engineer (Research); MR. R. G. SELL, Assistant Electric Engineer (Research), to be Assistant Electrical Engineer (Research).

The late Mr. A. C. B. Pickford

In addition to family mourners, the following were among those who attended the funeral on July 4, of the late MR. A. C. B. PICKFORD, former Assistant General Manager (Traffic) of the Western Region of British Railways, whose death on June 29 was recorded in our last week's issue:

British Transport Commission

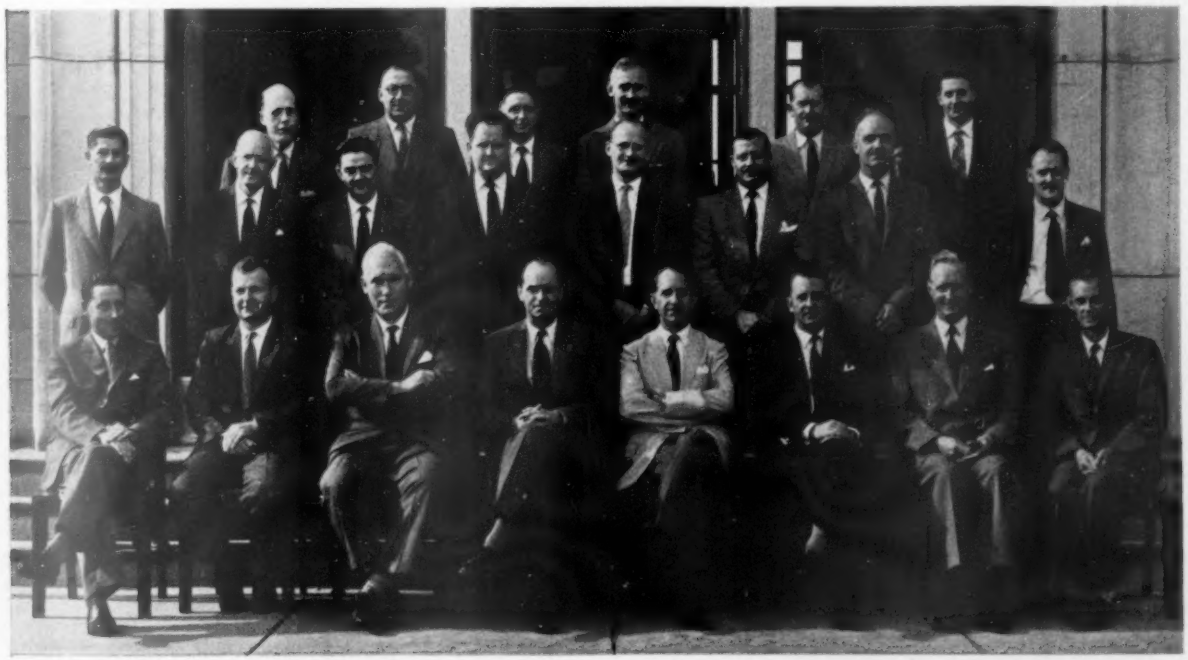
Sir John Benstead, Messrs. K. W. C. Grand, T. H. Hollingsworth, S. E. Raymond, D. Murray (also representing Messrs. B. X. Jessop and A. A. Harrison), E. Flaxman, E. A. W. Dickson, E. J. Vipond, F. J. Pepper (representing Mr. J. F. Harrison), Superintendent H. J. Crane (also representing Chief Constable), Messrs. M. C. K. Richins, A. Granville, E. W. Arkle (retired), J. R. Pike (retired).

Western Area Board

Messrs. R. F. Hanks, C. W. Rodd, A. H. Curtis Welch.

Western Region

Messrs. J. R. Hammond, H. G. Bowles, L. W. Ibbotson, G. W. Robson, W. G. Roberts, S. G. Ward (also representing Mr. D. F. Gowen), C. J. Rider, J. D. Swain, R. G. Henbest, J. W. J. Webb, W. A. L. Creighton, A. A. A. Cardani (also representing Mr. A. W. Woodbridge), A. W. J. Dymond, R. L. Charlesworth, C. W. Powell, H. E. A. White, E. C. Cookson, F. R. L.



Officers of East African Railways & Harbours, at a recent District Officers' conference

LONGACRE WOOD

PRIMARY SORTING

DOWN STAGING

ENGINE LINE

UP MAIN
DOWN MAIN
UP SLOW
DOWN SLOW

INSPECTOR'S CABIN

CRANE

CONTROL EQUIPMENT

SECONDARY HUMP

RETARDERS

Y.M.'s CABIN

UP DEPARTURES

SECONDARY SORTING

WEIGHBRIDGE

INSPECTORS CABIN

FUEL STORE

YARDMASTERS OFFICE

ROAD

MOTIVE POWER FUELLING POINTS

SOUTH FARM

NEW ROAD TO BATLEY

OLD CHURCH

OLD CHURCH ROAD TO BATLEY

UP STAGING

Y.M.'s CABIN (SHUNTING)

DOWN DEPARTURES

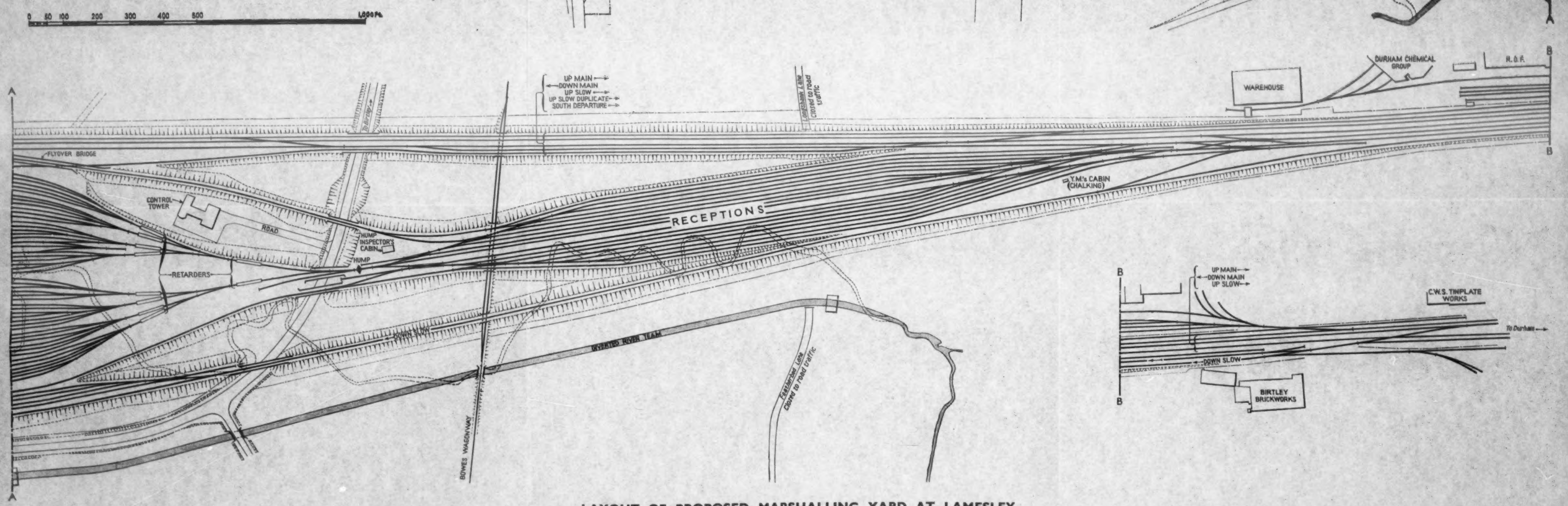
CAR PARK

ROAD

SWICKY LANE

To NEWCASTLE

UP MAIN
DOWN MAIN
UP SLOW
DOWN SLOW



LAYOUT OF PROPOSED MARSHALLING YARD AT LAMESLEY

Barnwell, D. W. M. Wilson, Captain J. D. Reed, S. C. Harvey (also representing S. G. Hearn), E. Harrison (also representing Mr. H. D. Poole), E. Havers (also representing Mr. C. Furber), F. R. Griffiths, E. R. Thomas (also representing Mr. R. A. Ryan), R. T. Knapman (also representing Mr. F. E. Phasey), W. G. Canning, H. R. Chubb, P. Peyman, S. Higgs, G. Phillips, P. J. Fisher, J. W. Costello (also representing Mr. N. S. Taylor), M. J. Collins, C. Burridge, J. Berry, E. J. Lammas, A. Wiles, E. Cowlard, Gilbert Matthews (retired), H. T. G. Miller (retired), A. Shoemack (retired), H. Holding (retired).

Messrs. G. A. V. Phillips, B. Seymour, R. J. Hill, R. G. McDonald, R. S. C. Pithouse, R. C. Hilton, M. G. Cooper (also representing Mr. J. Powell), A. T. Elvidge, D. S. Hart, H. E. R. Bastin, D. H. Hawkeswood, F. G. Dean, W. R. Stevens, H. Jenkins, J. H. F. Page, J. H. Swann, W. Griffiths (also representing Mr. J. F. M. Taylor), J. H. Webb.

London Midland Region

Mr. David Blee, Mr. J. H. Vine (retired), G. E. Curtis (retired).

Eastern Region

Mr. J. W. Dickinson (also representing Mr. J. Hancock).

Scottish Region

Mr. H. M. Lattimer (also representing Mr. James Ness).

Southern Region

Mr. S. B. P. Taylor (also representing Messrs. C. P. Hopkins, P. A. White, R. E. Sinfield) and W. H. F. Mepstead (retired).

London Transport Executive

Mr. F. G. Maxwell.

Railway Clearing House

Mr. W. S. Cutler, Mr. L. C. Robins.

British Road Services

Mr. Harold Elliott.

British Transport Docks

Mr. A. J. Walden (also representing Mr. W. Jeffers).

The Pullman Car Company Limited

Mr. F. D. M. Harding.

Also present

Mr. J. R. Bannard (Unilever Limited, also representing Mr. E. W. Whitaker), Mr. S. J. Bennett (Traders Co-ordinating Committee and Industries Lodge), Mr. Norman Clarke (Richard Thomas & Baldwins Limited), Mr. W. M. Dravers (also representing B.E.T. Federation & Mr. J. Spencer Wills), Mr. G. H. Golden (Federation of British Industries), Mr. H. Knight (British Iron & Steel Federation), Mr. E. James (representing National Coal Board, South Wales), Mr. R. Sears (Atlas Express Co. Ltd.), Mr. T. P. Sheridan (City of Oxford Motor Services), Mr. R. H. Farmers (Atlas Express Co. Ltd.), Mr. D. H. Joyce, Mr. G. A. Raxter (Shell Mex & B.P. Limited), Mr. F. H. Dowsett.

British Railways

MR. J. D. WEST, M.I.C.E., A.M.I.STRUCT.E., Assistant Engineer (Bridges), Chief Civil Engineer's Department, Kings Cross, British Railways, Eastern Region, who, as recorded in our June 30 issue, has been appointed Assistant Civil Engineer (Modernisation), was educated at Rutlish School, Merton, and entered the service of the former Southern Railway in 1927. In 1942 he was appointed Senior Engineering Assistant, London East Division and in 1944 Assistant Divisional

Mr. J. D. West

Engineer. In 1948 he was seconded to the Scottish Region of British Railways, later returning to the Southern Region. Mr. West became Bridge Assistant, Kings Cross, British Railways, Eastern Region, in 1949, later, the post was redesignated Assistant Engineer (Bridges), the position which he has now vacated.

MR. H. WYLES, A.M.I.C.E., A.M.I.STRUCT.E. Bridge Assistant, Chief Civil Engineer's

Mr. H. Wyles

Department, Euston, British Railways, London Midland Region, who, as recorded in our June 30 issue, has been appointed Assistant Engineer (Bridges), Chief Civil Engineer's Department, Kings Cross, British Railways, Eastern Region, trained as a pupil with the Butterley Company. He joined the former London Midland & Scottish Railway in 1930 and transferred to the Overbridge Section, Euston, in 1935. In 1943 he was appointed Resident Engineer, New Works Section, Blackburn District. Mr. Wyles became Resident Engineer (Bridges), Manchester, in 1945, Assistant (Steelwork), Euston, in 1953, and Assistant Engineer (Bridges), later the same year.

MR. D. LANGDON, Senior Engineering Assistant, Chief Civil Engineer's Department, Kings Cross, British Railways, Eastern Region, has been elected an Associate Member of the Institution of Civil Engineers, an Associate of the Reinforced Concrete Association, and a Member of the Prestressed Concrete Development Group.

Industrial

MR. K. BOREHAM has been appointed Sales Manager of Tempered Rubber Components Limited, a member of the Tempered Group Limited.

MR. A. PRESSLEY, Manager of the Machine Tool section of the Machinery Department of Thos. W. Ward Limited, has retired after over 51 years service with the company.

MR. N. L. HOWELL, General Manager, D.P. Battery Co. Ltd., has been appointed to the board.

MR. J. H. MAXWELL, Director & General Manager, W. T. Glover & Co. Ltd., has retired after 51 years' service.

MR. J. C. HALL and MR. E. P. GALLAGHER have been appointed to the board of Tees Side Bridge & Engineering Works Limited.

MR. R. MENHENIOTT, Technical Representative, Cardiff, Holman Brothers Limited, has been transferred to represent the company in North Wales.

MR. W. F. LIST, Assistant Managing Director, Castrol Industrial Limited, is to retire on January 1. He will be succeeded by MR. J. A. V. WATSON.

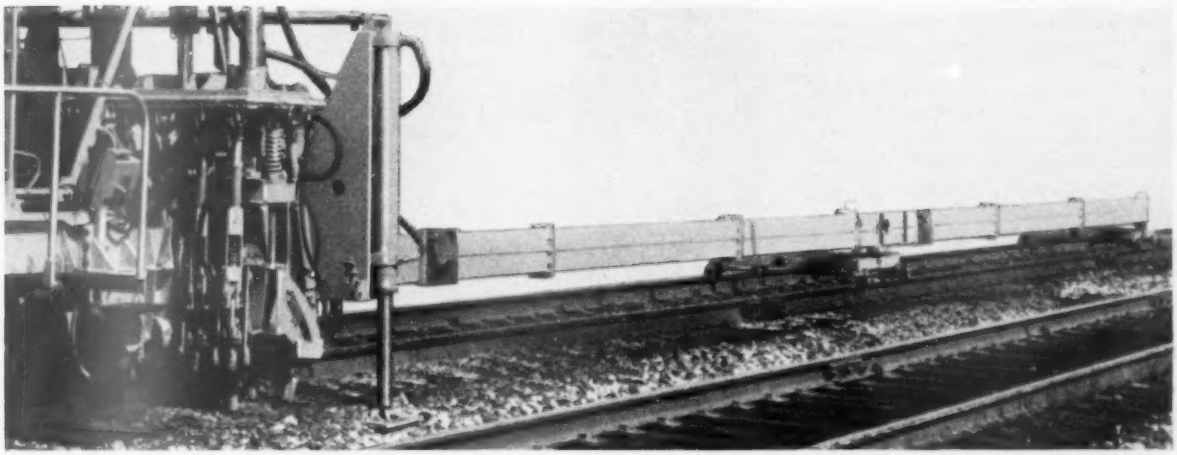
National Road Transport Federation

MR. D. O. GOOD has been re-elected Chairman of the National Road Transport Federation for the coming year. MR. A. BOLTON, Chairman of the Passenger Vehicle Operators' Association, and MR. K. C. TURNER, President of the Traders Road Transport Association have been elected Vice-Chairmen of the Federation.

Obituary

We regret to record the death, on July 1 at the age of 85, of MR. BURKEWOOD WELBOURN, a former Director & Chief Engineer of British Insulated Company, later amalgamated with Callender's Cable & Construction Company to form British Insulated Callender's Cables Limited.

NEW EQUIPMENT *and Processes*



TRACK LEVELLER

A new computer-controlled technique for surfacing track has been developed, which, it is claimed, can level track at any speed needed for any combination of tampers.

The main components of this electronic surfacing device include two 30-ft. long aluminium beams supported on bogies in front of the tamper, a foresight on each bogie, a potentiometer and other equipment for measuring grades, and a direct-reading meter.

The sequence of operation is: (1) The measuring device automatically determines which of the two foresights is higher. (2) The computer automatically selects the higher of the two and establishes a reference to the higher of the points. (3) Clamps on the tamper engage both rails which are then raised by hydraulic jacks, under the operator's control, until the meter reads zero. (4) With the track held at the desired grade the tamper fully tamps the track. (5) The unit then moves to the next jacking point and the sequence is repeated.

The computer automatically calculates the desired grade; a separate meter indicates true cross level.

Only one operator is required for the complete levelling and raising process.

Further details may be obtained from the Railway Maintenance Corporation, Box 1888, Pittsburgh 30, Pa., U.S.A.

WATER PURIFIER

The Mark 7 portable Deminrolit unit enables purified water to BP quality to be cheaply and simply produced.

The all-plastic non-regeneratable ion exchange unit produces up to 12 gallons of purified water hourly. A detachable cartridge contains ion exchange resins. When water is passed through these virtually all ionised solids are removed. Cartridges are replaced by regenerated ones when required.

Further details may be obtained from the Permutit Co. Ltd, Gunnersbury Avenue, London, W.4.

TRANSISTOR EQUIPMENT

A service has been introduced for equipment designers who require small numbers of special transistor inverters and converters which are outside the standard ranges on the market.

By standardising design procedure it is claimed that inverters can be specially produced at prices which are below the cost of laboratory models.

Quantity production can be arranged or design information can be provided.

Further details may be obtained from SCI Designs Limited, 30, Ingate Place, Queenstown Road, London, S.W.8.

FORK-LIFT TRUCK

High speeds of travel and lift are features of the Yale & Towne series D51 diesel-powered fork-lift trucks. The two new models, fitted with a Perkins 60 b.h.p. four-cylinder diesel engine, have a load capacity at 24-in. centres of 3,000/4,000 lb. and 5,000/6,000 lb., and are generally similar to the maker's K51 battery electric models.

Maximum travel speed is governor-controlled at 8½ m.p.h., and speed of lift is 55 f.p.m. under full load and 65 f.p.m. under no load.

The gear change provides for two forward and two reverse speeds, power being transmitted to the hypoid rear axle through triple-reduction spur gears. Axle articulation, to ensure equal wheel loading on uneven floors, is provided by a pivot mounting of the steering axle.

Automotive-type travel controls are fitted, with the hydraulic controls at the right-hand side of the driver's seat.

Hydraulic pressure for the lift and tilt cylinders is supplied by a gear-type pump driven from the engine timing gears.

Attachments available include a 360 deg. rotating fork unit, fork side shifting, roll clamps, and crane boom. Further details may be obtained from the Yale & Towne Manufacturing Company, Wednesfield, Wolverhampton.

LIPPING MACHINE

A single-edge progressive lipping machine, incorporating a Philips 1-kW. high-frequency heating generator, has been produced for woodworking.

Quick alteration of settings is possible and the unit is easily moved to new positions, enabling advantages of flow production to be obtained, even on short runs.

Production speeds are 11-29 ft. a minute, depending upon the thickness of the material, and the type of adhesive.

Panels from 6 in.-36 in. wide and ½ in.-1½ in. thick can be accommodated, with lippings ¼ in.-1½ in. in thickness.

Further details may be obtained from Philips Electrical Limited, Century House, Shaftesbury Avenue, London, W.C.2.

RAIL-FLAW DETECTOR

A new easily-portable rail-flaw detector is announced, which is said to incorporate improvements over earlier models. Completely transistorised, the detector weighs only 5 lb. but is of rugged construction.

The operator slides the transducer over the rail surface, listening for a distinctive note in the earphones. Any change in pitch, or absence of tone, indicates a crack, flaw, or circumstance requiring further investigation.

The instrument uses the principle of ultrasonic resonance to find the nearest reflective surface. In a perfect rail the sound will be reflected from the bottom surface, or from a bolt hole, the two tones being sufficiently different to let the operator know which condition exists. A meter in the handle is calibrated to give a dial reading corresponding to the change of pitch in the earphones, thus providing an indication unaffected by background noise or the operator's hearing.

Angular cracks and certain types of defect cause signals to disappear. The operator can determine the extent of such defects by moving the transducer along the rail until tone and meter reading reappear.

Further details may be obtained from Branson Instruments Inc., 40, Brown House Road, Stamford, Conn., U.S.A., or McPhar Roberts Limited, 139, Bond Avenue, Dow Mills, Ontario, Canada.

HYDRAULIC RAMS

A range of hydraulic rams has been introduced, designed to operate on oil at a working pressure of 2,000 lb. per sq. in.

Seven standard bore sizes are available with bores ranging from 1¾ in. to 7½ in., and strokes from ½ in. to 10 ft. Both single- and double-acting versions are manufactured.

Plain, eye-type or screwed piston rods can be supplied and the cylinders are available with either trunnion or clevis mountings, or with feet at top or bottom or side feet at both ends.

Further details can be obtained from Chamberlain Industries Limited, Staffa Works, Argall Avenue, Leyton, London, E.10.

POLARISCOPE

A new polariscope, for photo-electric stress analysis has been produced.

This 5½-in. dia. unit is claimed to be unique in that it has provision for use either as a diffused-light or as a transmission instrument. The former type is more suitable for usual examination, is more adaptable for quick measurements of results, and gives good definition of fringe photographs. The transmission type enables stress patterns to be projected, facilitates the drawing of isoclinic lines, and gives better alignment of model boundaries in the image.

Further details may be obtained from Sharples Engineering Co. (Bamber Bridge) Ltd., Hillcrest Works, Chorley Road, Walton-le-Dale, Preston, Lancs.

PIPE INSULATION

Foamflex pipe insulating material has been introduced to reduce installation costs. It is suitable for hot, cold, and low-pressure steam working.

It is available in lengths of 9 ft. 9 in. to fit pipes with nominal bores from ⅜ in. to 4 in. Depth of cover complies with BS1334: 1959.

The sections are supplied split longitudinally and are sealed with a special adhesive.

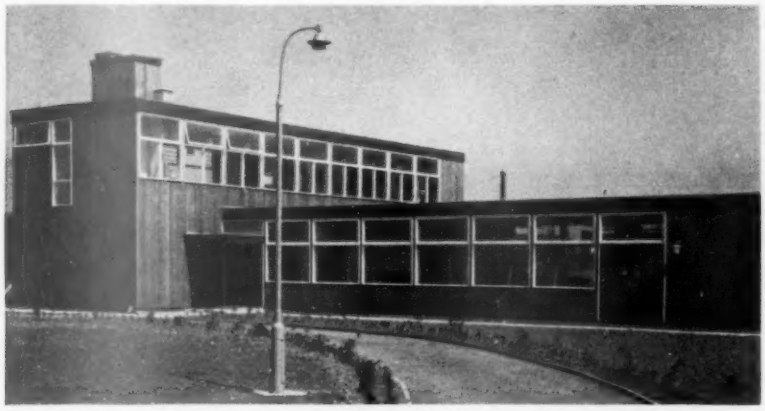
Thermal conductivity is 0·22 B.T.U.'s/in. thickness/sq. ft./hr./deg.F. at a mean temperature of 70 deg.F. Maximum operating temperature is 130 deg.C. and minimum −50 deg.C.

Further details may be obtained from Semtex Limited, 19, Berners Street, London, W.1.

SILICONE RESIN

A new resin has been developed for impregnating asbestos board to stop water absorption. Such board, treated with this low-viscosity solution in toluene, is claimed to retain good electrical insulating properties for long periods, even in conditions of 100 per cent relative humidity.

Further details may be obtained from Midland Silicones Limited, 68, Knightsbridge, London, S.W.1.



Exterior of the British Railways diesel training school at Derby

School for diesel train drivers at Derby

Extension of training facilities for staff converting from steam to diesel traction

A school for diesel train drivers of the London Midland Region of British Railways has been opened at Derby by Sir William Stanier, former Chief Mechanical Engineer of the L.M.S.R. The school, which has a capacity of 40 trainees, replaces the Siddals Road School, Derby, which was established in 1955.

The timber building comprises a two-storey block for classroom instruction and an adjoining single-storey demonstration block. Trainees attending the course are all steam locomotive drivers and passed firemen who have already received some practical training on diesel locomotives or railcars.

The aim of the course is to equip diesel drivers with a basic working knowledge of the power units, brakes, and auxiliary equipment of diesel locomotives and railcars. This theoretical instruction is sandwiched in with operational instruction on the track. Separate courses are provided for diesel locomotive and for diesel railcar drivers. The syllabus for locomotive trainees is based on the Types 2 and 4 locomotives operating in the Midland Region, this course being made up of one week's practical driver-training on a service locomotive, one week in the training school, and a further week on a locomotive.

Note-taking kept to a minimum

Railcar trainees receive two weeks' instruction in the school and one week's driving instruction in service. To reduce note-taking to a minimum, each trainee is issued with a comprehensive set of lecture notes and diagrams. All instructors are experienced diesel drivers, and considerable emphasis is given to practical fault-finding and rectification to eliminate service hold-ups.

The first-floor accommodation comprises a large lecture room and a recreation room. Instead of desks, each chair is fitted with a hinged writing stand. This room is provided with a Transpaque daylight projector which produces satisfactory screen pictures from transparencies without the use of black-out. At the entrance end of the recreation/reading room is a Stotts electrically-heated tea boiler.

The demonstration room on the ground floor contains a complete power equipment for a railcar, showing a B.U.T. engine with cardan-shaft coupling to the change-speed gearbox and final drive unit. Each unit is sectioned to show internal parts.

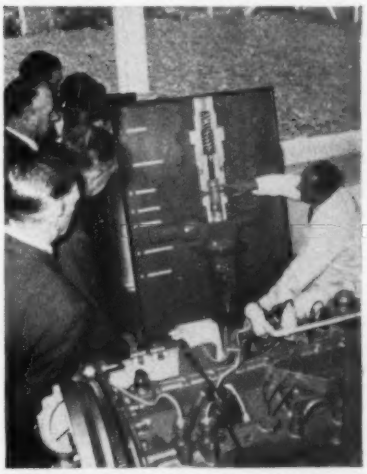
On the benches are a wide range of auxiliary equipment and large-scale sectional models of brake-valves and fuel injection equipment. Also on the ground floor, the lecture room is fitted for film projection and has an Aldis Epivisor.

The building was supplied and erected by Vic Hallam (Contractors) Limited. It is of Derwent prefabricated unit design, the structure consisting of a post-and-beam frame and outside cladding of Western Red Cedar board panels. The standard-width units, incorporating glazed sections as required, are assembled by bolting together on a reinforced concrete slab foundation.

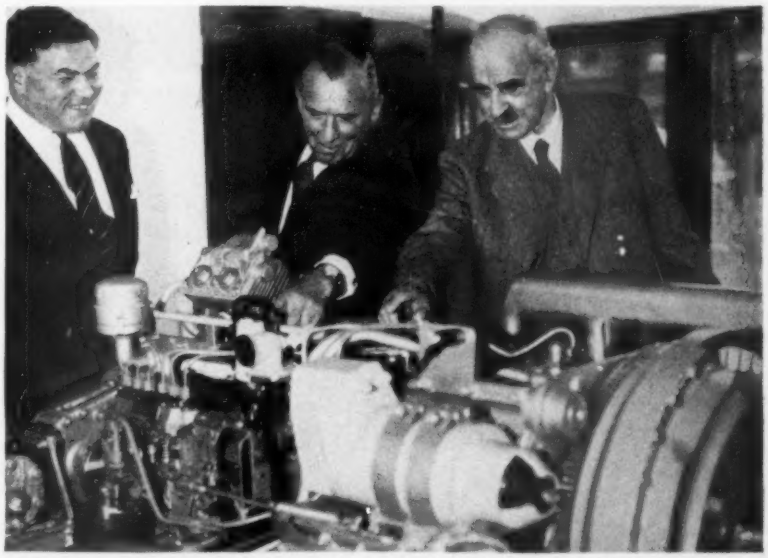
The inner skin is of plasterboard with a facing of aluminium foil on the cavity side, the cavity being filled with glass-wool insulation. Large areas are glazed and these incorporate adjustable Naco-vents carried in aluminium frames. The flat timber roofs are covered with layers of felt and bitumen and are surfaced with granite chippings. Roof drainage is taken through aluminium pipes which are carried inside the building.

Heating

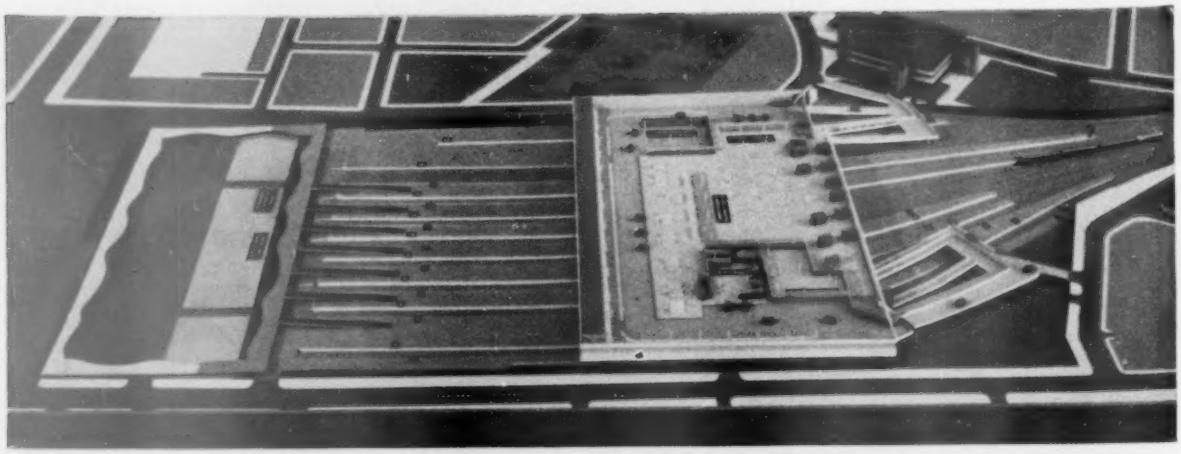
Heating is provided by a Beeston automatic low-pressure gas boiler, using Sigmund electrically-driven circulating pumps. A large calorifier provides the domestic hot-water supply. In the lecture rooms the tubular radiators are enclosed in the skirting board at floor level. Pyrotenax cable is used for all electrical wiring, the supply voltage for use with portable tools and equipment being reduced to 12V.

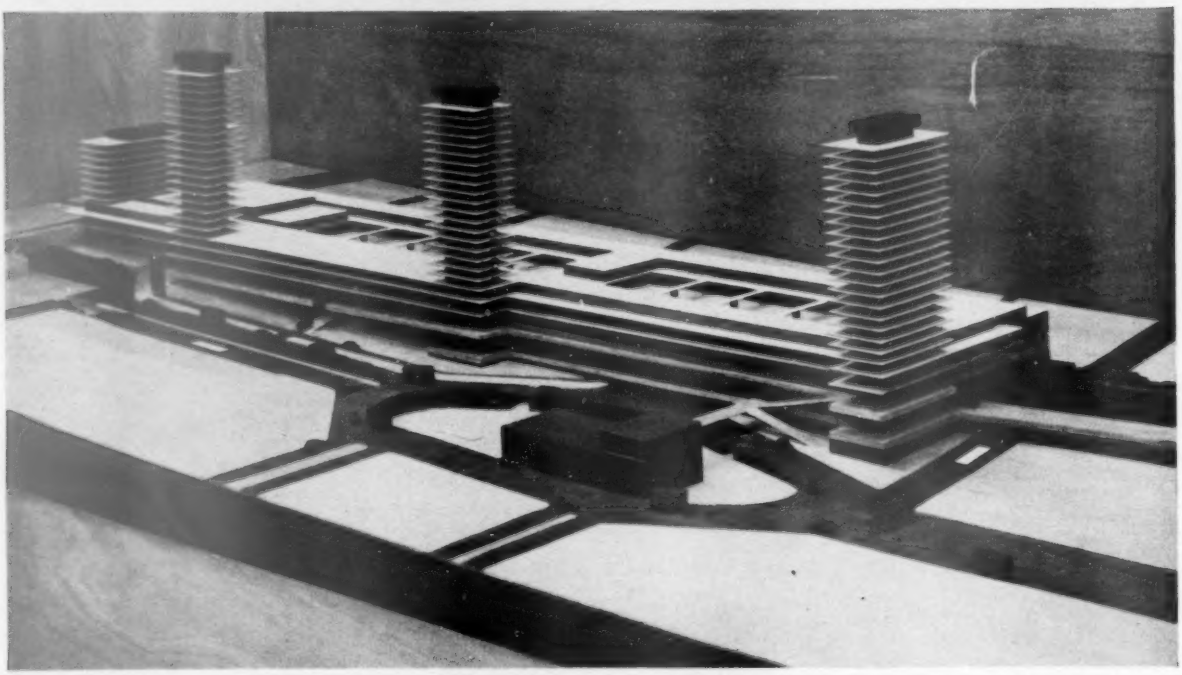


Model of diesel fuel injection pump



Diesel railcar engine assembly being examined by (left to right): Mr. R. L. E. Lawrence, Mr. J. Wootton, and Sir William Stanier





Two of the models shown at the transport architectural exhibition. (Above): Proposed redevelopment scheme for Euston Station; (below): proposed redevelopment scheme for Birmingham Snow Hill Station

Exhibition of transport architecture

Models and photographs show new transport look

Over 60 examples of designs by British Transport architects, including provisional schemes for stations in London and Birmingham, were on view to the public at the Ceylon Tea Centre in London from July 3 to July 6.

The exhibition, "New Architecture in Transport," coincided with the sixth Congress of the International Union of Architects which took place in London last week.

There were models of proposed railway stations for Euston, Birmingham (New Street), and Birmingham (Snow Hill), and an artist's impression of the Victoria Station of the future.

A window display featured a model of a railway station for Stafford and a large drawing of the recently completed station at Broxbourne. Other designs included new or remodelled stations; a control tower at Perth marshalling yard; an overhead electrification maintenance depot; offices, and signalboxes.

An artist's impression of the railway engineering laboratories scheduled for Derby was also exhibited, and a pictorial display showed how the appearance of a railway station can be improved without structural alteration by rearrangement of direction signs, poster boards, and the use of colour.

Among designs exhibited by other undertakings of the Commission were London Transport's underground station at Notting Hill Gate and its omnibus overhaul works at Aldenham; the Tilling Omnibus Group's bus stations at Bristol and Crewe; British Road Services' depots at Townsend Lane, Liverpool and Bromford Lane, Birmingham; the Hotels & Catering Services' cocktail room at Aberdeen station hotel and the "West Riding" grill room at Bradford Forster Square Station; and the Docks' passenger terminal at Riverside Quay, Hull.

There was also a selection of furniture designed for stations, offices, and ships; ships' lighting fittings; a prefabricated construction panel used for lineside buildings, an automatic ticket-printing machine and booking-office furniture. Colour slides of new works were shown with a recorded commentary.

English Steel Corporation Plant

Two important ceremonies in the history of the English Steel Corporation Limited were performed in Sheffield last week by the Chairman of the Corporation, Viscount Knollys. At Tinsley Park, Lord Knollys poured the first skip of concrete for the foundations of a £26-million steelworks.

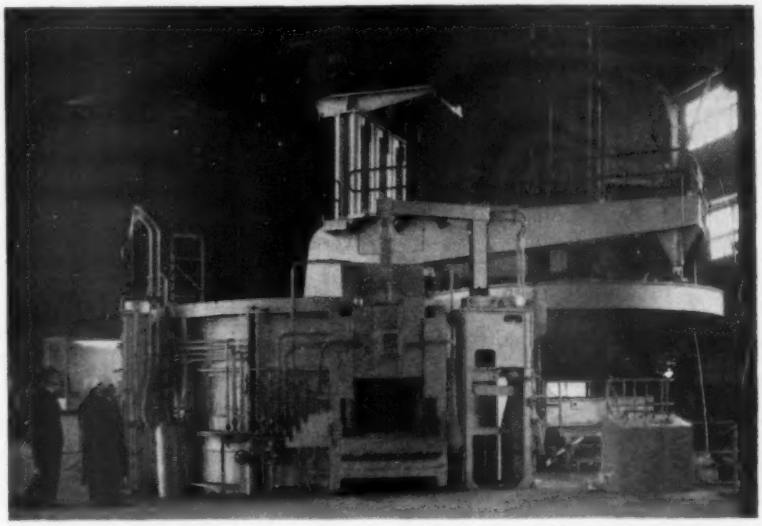
Each of the two furnaces will be of 100 tons capacity, and the overhead crane equipment in the casting and charging bays will be of 150 tons capacity. With these furnaces, annual production of alloy and carbon steels will rise to nearly a million ingot tons, and billet and bar production will be trebled.

Electric arc melting furnace

Later in the day, at the River Don Works, Lord Knollys commissioned the largest electric arc melting furnace in operation in the United Kingdom. Designed and built by Birlec-Efco (Melting) Limited, this furnace can melt an 80-ton charge in less than 3 hr. This mill will be used largely for the production of special alloy steels for casting in vacuum and, in conjunction with other furnaces, will enable vacuum-cast ingots up to 180 tons in weight to be produced.

Power is supplied by an A.E.I. 20-MVA. transformer having a resistance transfer on-load tap-change mechanism designed for electric arc furnace operation. Power surges during the initial melting period are limited by a 10 per cent auxiliary reactor. The main switch is a Reyrolle oil circuit breaker having a rupturing capacity of 750 MVA. Low-voltage water-cooled flexible cables carry the current from the transformer to the furnace.

During the melting period the current is approximately 28,200A. per phase. The electrodes are 20-in. dia. and each electrode arm is counterbalanced by pneumatic cylinders, which enables rapid positioning and control to be achieved by small motors. The control gear and instrumentation are housed in a completely enclosed control room adjacent to the furnace. The overhead travelling crane, supplied by Clyde Crane & Booth Limited, which serves the furnace and vacuum casting plant, has a capacity of 200 tons on the main hoist and 50 tons on the auxiliary hoist.



Electric arc furnace ready for charging at River Don Works

International Union of Railways

The board of management of the International Union of Railways held its 59th session in Paris on June 1. The meeting was presided over by Mr. John Ratter, Member of the British Transport Commission, and Chairman of the International Union of Railways, supported by Mr. Armand, Secretary-General and Mr. Rousseau, Chief Executive Officer. The following officers attended:—

Belgium: Mr. De Vos, General Manager of the S.N.C.B. and Mr. Adam, Manager at the General Headquarters of the S.N.C.B., Mr. Desorgher, Chairman of the 3rd U.I.C. Committee; *Czechoslovakia:* Mr. Pospisil, Vice-Minister of Transport & Communications of the Czechoslovak Socialist Republic and Mr. Hlava, Chief Engineer at the Ministry of Transport & Communications; *France:* Mr. Dargeou, General Manager of the S.N.C.F., Mr. Guibert, Assistant General Manager of the S.N.C.F., Mr. Mermier, General Manager of the South-Eastern Region, Mr. C. Martin, Head of the Motive Power & Rolling Stock Department, Mr. Vaubourdolle, Head of the Way & Works Department; *Western Germany:* Prof. Oeftering, Senior Chairman of the D.B., Mr. Schelp, Chairman of the D.B., Mr. Hennig, "Ministerialdirigent," Chairman of the 6th Committee of the U.I.C.; *Eastern Germany:* Mr. Scholz, Vice-Minister, D.R., and Mr. Mrossko, Principal Adviser, D.R.; *Great Britain:* Mr. J. L. Harrington, Chief Shipping & International Services Officer, B.T.C., Mr. G. M. Leach, International Traffic Officer, B.T.C., Chairman of the 1st Committee of the U.I.C.; *Hungary:* Mr. Nemeth, Vice-Minister, General Manager of the Hungarian State Railways, Mr. Keltai, Chief Officer; *Italy:* Mr. Rissone, General Manager of the F.S.; *Netherlands:* Mr.

Viscount Knollys performing the opening ceremony at Tinsley Park

Lohmann, Chairman of the N.S., Mr. Wanskink, General Manager and Mr. Koster, Chairman of the O.R.E.; *Poland:* Mr. Tarantowicz, Under-Secretary of State, Ministry of Communications; *Portugal:* Mr. De Brion, Deputy General Manager of the C.P.; *Sweden:* Mr. Upmark, General Manager of the S.J.; *Switzerland:* Mr. Gschwind, Chairman of the C.F.F.

The board was informed of the progress made in work on the building of the new U.I.C. headquarters.

After examining the draft report on the present European railway situation, drawn up jointly by the General Secretariat and an *ad hoc* Working Party of the 6th Committee presided by Mr. Hennig, Ministerialdirigent at the Deutsche Bundesbahn, Chairman of the 6th Committee, the Board adopted the final text of the report and gave full authority to the *ad hoc* working party and the General Secretariat to proceed with the drafting of a summary intended for wide distribution.

The board of management approved the various draft amendments to the texts of the R.I.V., R.I.C. and Europ Convention submitted by the 8th Committee and to be forwarded to these organisations, as well as an additional amendment requested by the Committee of the R.I.C. Union.

Future of passenger traffic

Attention was given to the general problem of the future of passenger traffic. After having set aside, at least for the time being, the suggestion to set up a carriage pool, the board adopted certain directives intended for the Through-Carriage Conference in order to improve the formation of international trains which should, so far as possible, consist of the carriages of one administration only, and to remove the anomalies which often arise as a result of the system of compensation in kind. The Secretary-General was requested to forward these directives to the appropriate bodies and to supervise their implementation.

The 3rd Committee was requested to decide which data should be published in the introduction of periodic statistics to further standardisation and modernisation, as well as the form the publication should take and and how frequently it should appear.

Mr. Koster, Chairman of the Office for Research & Experiments, was requested to re-examine the charging of rolling-stock forwarded to the Vienna-Arsenal Test Centre with the Austrian Federal Railways, which was not represented at the meeting, since the administrations represented at the board of management meeting agreed to convey rolling stock forwarded to the Vienna-Arsenal Test Centre free of charge over their own lines.

Lengthy discussion took place concerning the important question of the efforts made by the U.I.C. and the O.R.E. in the field of the standardisation of rolling stock. The board approved the continuation of studies on the standardisation of wagons. It also approved the continuation of studies on the homologation of diesel locomotives.

Mr. Desorgher, Chairman of the 3rd Committee, was requested to submit a report giving details of the organisation of the Committee which was to be set up in order to study important financial and accountancy problems. On the proposal of Mr. Martin, Chairman of the 5th Committee, the board gave approval to the setting up of a "Breaking" section within this committee.

The principle of developing the facilities provided by the U.I.C. in the field of information was agreed and the Secretary-General was authorised to send out a circular letter on this subject to the railway administrations likely to be interested in these services.

In accordance with the decision of the two control committees of the Information & Publicity Centre of the European Railways (C.I.P.C.E.), the board of management approved the admission of the London Transport Executive to C.I.P.C.E. as a participating administration.

The Secretary-General gave an account of the most important international railway work carried out since the last board meeting.

The next session will be held in London on September 26, 1961.

Signalling extension at Huddersfield

When the power-operated signalbox at Huddersfield, opened in November, 1958, was first designed, provision was made for future extension, space being provided for the enlargement of the control panel and track diagram.

Originally the signalbox took over the work of two mechanical signalboxes at Huddersfield, and from July 9, the installation took over signalling from the boxes at Springwood and Gledholt Junction. The switch console has been extended to accommodate 32 additional switches, and the diagram modified accordingly. In addition Lockwood No. 1 and Berry Brow Signal Boxes will be closed and the work transferred to Lockwood No. 2.

Full colour-light signalling has been installed over 12 track miles, approximately five route miles, of line, the signalling installation comprising 27 colour-light signals, seven position-light subsidiary signals, 22 electric point machines, and 83 track circuits. Train describer bells have superseded the former block working between Huddersfield and the outlying signalboxes, Longwood Goods and Lockwood. This extension of centralised signal control has meant improved and more economical train working in the Huddersfield area.

The main work was carried out by S.G.E. (Signals) Limited, under the supervision of Mr. A. F. Wigram, Chief Signal & Telecommunications Engineer, York, British Railways, North Eastern Region.

Parliamentary Notes

Closure of main railways

Mr. James Boyden (Bishop Auckland—Lab.) on the motion for the adjournment on July 4, represented to the Minister of Transport the very strong feelings in the north of England against the proposal to close the Barnard Castle-Penrith railway line. He said the closure of the main line—this was not a branch line—would cause unemployment and distress. He understood that the North-East Consultative Committee offered valuable advice to the British Transport Commission on economies in running the line. It was originally unconvinced that the 60 extra miles of the freight diversion was an uneconomic proposition. He thought that the Minister of Transport should offer the British Transport Commission a subsidy for the line.

He said that it seemed unfair that the North should continue to be starved of capital expenditure while millions of pounds were spent on electrifying London suburban lines on which there was a reasonable service.

Government policy

Mr. John Hay, Joint Parliamentary Secretary, Ministry of Transport, said that at the present stage he could express no opinion whatever on the merits of the Commission's proposal to close this line. The current position was that in January last a joint session of the Transport Users' Consultative Committees for the North-Western and the North-Eastern areas recommended by a majority that the Commission's proposals for the withdrawal of passenger services should be approved. Freight services had already been diverted to other lines to see if these could handle the traffic satisfactorily. Discussion on the merits of the case was still going through the statutory procedure.

Mr. Hay added that thought was being given in the context of the legislation proposed for the reorganisation of the Commission's undertakings to the present consultative procedure to see whether any improvements were necessary.

Staff & Labour Matters

Claim for shorter working week

The claim of the Transport Salaried Staffs' Association for a 38-hr. week for all railway salaried staff was heard before the Railway Staff National Tribunal on July 12.

The tribunal comprised Mr. Roy M. Wilson, Q.C., Chairman; Sir Richard Snedden, nominee of the British Transport Commission; and Mr. R. Willis, nominee of the T.S.S.A.

The case for the T.S.S.A. was presented by Mr. W. J. P. Webber, General Secretary of the Association and for the B.T.C. by Mr. A. R. Dunbar, the Commission's Manpower Adviser.

Road haulage wages to rise

At a meeting on July 6, the Road Haulage Wages Council agreed to propose a reduction from 44 to 42 hr. in the basic week and an increase of approximately 3 per cent in the basic rates of wages for road haulage workers. The intention is that the 3 per cent should be added to the basic wage payable in Grade 1 areas and the final figure rounded off to the nearest 3d. Five shillings will be added to arrive at the rates for wages in the London area and four shillings will be deducted in respect of Grade 2 areas.

The present wage payable in Grade 1 areas for drivers of vehicles with a carrying capacity of between five tons and ten tons is £9 5s. 6d. The increase of 3 per cent will amount to 5s. 6d., bringing the total to £9 11s. which will be paid on 42 hr. instead of 44 hr.

The Rates Committee of the Road Haulage Association will meet later to consider the effect on road haulage rates of the wage increase and other rises in costs since the last rates increase.

CONTRACTS AND TENDERS

French Railways' order for 2,600 h.p. diesel locomotives

The S.N.C.F. has entrusted the design of a 2,600/3,000 h.p. diesel-electric locomotive to two manufacturers who specialise in this type of work, namely (for the mechanical parts), Cie des Ateliers et Forges de la Loire; and (for the electrical parts) Cie de Construction de Gros Matériel Electro-mécanique.

An order has been placed for 20 locomotives of the type developed during the course of this design with the following group of manufacturers: Compagnie des Ateliers et Forges de la Loire (mechanical parts and erection); Compagnie de Construction de Gros Matériel Electro-mécanique (electrical parts); Soc. Fives-Lille-Cail (mechanical and electrical parts, in collaboration with the first two manufacturers).

In accordance with the S.N.C.F.'s dieselisation plan, these locomotives are intended to replace steam traction on lines of lesser importance where high horse-power ratings are required but where traffic density does not justify the capital outlay for electrification.

The locomotives will be equipped with a Sulzer 12 LVA 24 engine of 2,600 h.p. with provision for raising the output to 3,000 h.p. at a later date.

With a continuous tractive effort at the rail of 18 *tonnes* and a maximum speed of 130 km.p.h., these locomotives, which will be provided with a steam-heating boiler, will be suitable for working both heavy freight trains and fast passenger trains. Because of their low axle-loading, they will be able to operate on secondary lines with a lighter permanent way.

The Brazilian National Railways has placed an order with MATISA Equipment Limited, for 81 Lightweight ballast tampers with motorised trolleys and 6 B-60 heavy ballast tampers.

British Railways, Southern Region, has placed the following contracts:

W. H. Gaze & Sons Ltd., resurfacing and drainage, Kemp Town Goods Yard

R. Corben & Son Ltd., provision of rope store, Dover Marine

B.K.S. Air Survey Limited, aerial survey

Hunting Surveys Limited, aerial survey

Szerelmey Limited, cleaning of stone and brickwork, Waterloo Station

Aubrey Watson Limited, reconstruction of bridge, Newton St. Cyres.

Cleveland Bridge & Engineering Co. Ltd., reconstruction of road bridge, Selsdon

Jewell & Son, improvements to staff accommodation, Yeovil Town Motive Power Depot

Bectine Electrical Co. Ltd., installation of electrical services, Selhurst Carriage Servicing Shed

Maurice Hill Limited, cleaning, tarring and painting, Kingston river bridge

F. G. Winter Limited, improvements to Waterloo Terminus Station

Demolition & Construction Co. Ltd., demolition of redundant motive power depot, Dover Marine

Head Wrightson (Teesdale) Limited, repairs to inner dock gate, Dover train ferry dock.

The Export Services Branch, Board of Trade, has received calls for tenders as follow:—

From Ceylon:

Supply of M.S. slotted angle racks.

The issuing authority is Ceylon Government Railways and firms interested should contact the Crown Agents for Overseas Governments and Administrations, 4 Millbank, London, S.W.1, reference No. W.2, Ceylon Railway 3485 should be quoted. The closing date is July 19. The Board of Trade reference is E.S.B./21058/61.

From Egypt:

Supply of trip jacks.

The issuing authority is the Egyptian Railways, and tenders should be addressed to the Purchases and Stores Department, Railway Building, Shoubra Subway, Cairo. The closing date is August 21. The reference No. is E.R. 310.G.8/299. The Board of Trade reference is E.S.B./21338/61.

From Korea:

3,000 railroad bridge ties, untreated mixed hardwood.

The issuing authority is the Office of Supply, Government of the Republic of Korea, Seoul, Korea, to whom bids should be sent, quoting invitation No. 1841-M. The closing date is July 22. The Board of Trade reference is E.S.B./21839/61/I.C.A.

From Pakistan:

4,000 pipes earthenware saltglazed for drain, 4 in. bore, 2 ft. 0 in. long.

The issuing authority is the Chief Controller of Stores, Pakistan Eastern Railway, Pahartali, Chittagong, to whom bids should be sent. The closing date is July 29. The tender No. is P6/F1/70/61. The Board of Trade reference is E.S.B./21097/61.

One vertical electric furnace for manufacture of high speed tools and hot die steel, suitable to work on 400/440 V. 3-phase, 50 c/s a.c.

The issuing authority is the Chief Controller of Stores, Pakistan Eastern Railway, Pahartali, Chittagong, to whom bids should be sent. The closing date is July 25. The tender No. is P6/C/100/58. The Board of Trade reference is E.S.B./21099/61.

From Portuguese West Africa:

15,000 kg. wool waste.

The issuing authority is the Ports, Railways and Transport Department, Lourenço Marques, to whom bids should be sent. The closing date is August 21. The tender No. is 180/61. The Board of Trade reference is E.S.B./21366/61.

From South Africa:

One front end loader, 1½ cu. yd. capacity, crawler mounted, diesel engined, heavy duty type

As above, but pneumatic tyred, front end loader, one

As above, but of 2 cu. yd. capacity, front end loaders, three.

The issuing authority is the Stores Department, South African Railways, and tenders should be sent to the Chairman of the Tender Board, S.A.R., P.O. Box 7784, Johannesburg. The closing date is July 21. The tender No. is F.8741. The Board of Trade reference is E.S.B./21835/61.

241 items of rivets, aluminium and copper.

The issuing authority is the Stores Department, South African Railways, and tenders should be sent to the Chairman of the Tender Board, S.A.R., P.O. Box 7784, Johannesburg. The closing date is August 4. The tender No. is D.8643. The Board of Trade reference is E.S.B./21834/61.

From the Philippines:

10 diesel engines for low floor railcars, 4 cycle, water cooled, 180 h.p. at 1,500 r.p.m.

The issuing authority is the General Manager, Manila Railroad Company, Manila, to whom bids should be sent. The bid indent No. is 34. The closing date is July 25. The Board of Trade reference is E.S.B./21860/61.

From Portuguese East Africa :

240 Railway Wagons of 3 axles, drop-sided, 40 tons

65 Railway Wagons of 4 axles, closed, 40 tons

40 Railway Wagons of 4 axles, closed, for fruits, 30 tons

25 Railway Wagons of 2 axles, drop-sided, 18 tons

5 Railway Wagons of 2 axles, closed, for fruit, 18 tons

8 Railway Wagons of 4 axles, closed, 30 tons, for cattle.

The issuing authority is the Ports, Railways and Transport Department, Lourenco Marques, to whom bids should be sent. The closing date is October 23, 1961. The tender No. is 200. The Board of Trade reference is E.S.B./22078/61.

Contract of elaboration of the final project and construction of a building for the heads of departments of traction material, general workshops, track and works and school of apprentices in Lourenco Marques.

The issuing authority is the Ports, Railways, and Transport Department, Lourenco Marques, to whom bids should be sent. The closing date is August 25, 1961. The tender No. is 200. The Board of Trade reference is E.S.B./22077/61.

Further details relating to the above tenders together with photo-copies of tender documents, unless otherwise stated, can be obtained from the Branch (Lacon House, Theobald's Road, W.C.1).

NOTES AND NEWS

Indian Railways Chairman. In the editorial article on page 4 of our issue of July 7 we recorded that we had received a copy of the report of the Indian Railway Board from the Chairman, Mr. K. B. Mathur. Mr. Mathur was Chairman of the Board when the report was compiled, but the present Chairman is Mr. Karnail Singh.

Courses in electric traction. In our issue of June 30 we inadvertently published the name of one of the authors of the article on courses in electric traction at Imperial College as Professor A. Justin. This should have been Professor A. Tustin.

Incorrect caption. In our issue of July 7, the caption to the illustration on page 20 was incorrect. What was depicted was the last 20 ft. of a 300-ft. rail being pulled on to the train by the winch.

National timetable. British Railways has in preparation a national timetable which will give particulars of long- and medium-distance trains on all Regions, and important connecting services. The tables will be designed on simple lines and will be easy to understand. The price has not yet been announced but it is expected to be substantially less than 12s. 6d., which was the price of Bradshaw.

New Haven Railroad bankruptcy. On July 7 the New Haven Railroad filed a petition for re-organisation under the Bankruptcy Act. The previous day the company had been refused a loan of $5½ million by the Federal Government. The petition was approved by the District Court. Services are to continue without any curtailment according to an assurance given to the Governor of Connecticut from Washington.

Indian Industries Fair. An official United Kingdom exhibit is to be provided by the Board of Trade at the Indian Industries Fair to be held in New Delhi from November 14, 1961 to January 1, 1962. A large commercial display of British products is also being arranged.

Paris express Metro. The French Minister of Public Works, Mr. Buron, inaugurated the work on the express Metro in Paris on July 7. Within the Paris boundaries the line will have only six stations, each underlying a big Metro junction.

Opening of Doncaster motorway. The Minister of Transport, Mr. Ernest Marples, will open the 15-mile long, £6-million Doncaster motorway on July 31.

Bus stops in Parliament Street. The London Transport Executive has rearranged stops for 22 bus routes in Parliament Street. Southbound buses have been regrouped at four stops, near Derby Gate.

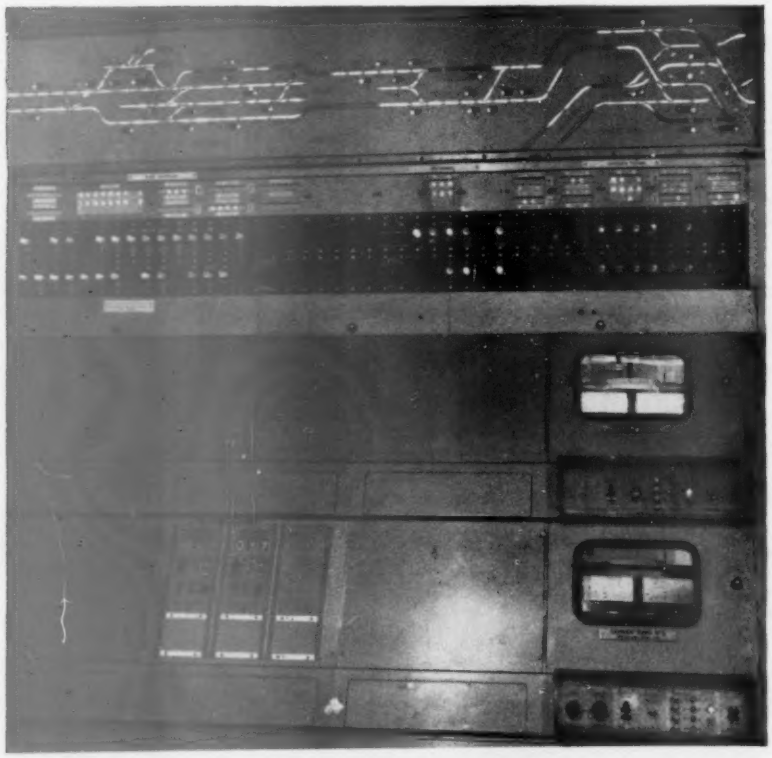
Trolleybus conversion. The London Transport Executive is to convert five of the remaining 20 trolleybus routes in London on July 19. The routes will be taken over by diesel-engine Routemasters.

Week-end management course. The British Iron & Steel Federation held a week-end management course at its Management College near Leamington Spa last week-end. The theme was "the impact of European integration on the British iron and steel industry."

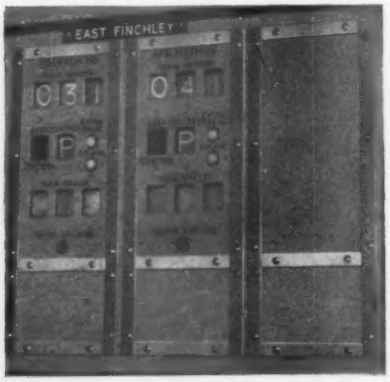
Change of address. The sales office of the Infra Red Development Co. Ltd. has been transferred to 98 St. Pancras Way, N.W.1,

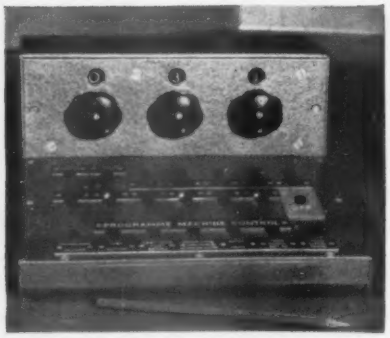
SIGNALLING DEVELOPMENT ON LONDON TRANSPORT

(*See July 7 issue, pages 17-18*)



Section of main panel at Leicester Square, controlling Northern Line to East Finchley. Details shown on right





(Above): panels showing state of programme machines. (Below): control unit

The train in new livery approaching Kings Cross from Newcastle and Edinburgh

and has become part of the Process-Control Division of Hilger & Watts Limited. Mr. P. Walduck will continue as Sales Manager.

Travel to Austria. The Eastern Region of British Railways has published a brochure giving details of fares and services to Austria from London by the Harwich-Hook of Holland route.

Anglo-Scottish car carrier. The daytime "Anglo-Scottish Car Carrier," first-introduced last year, provides a service for motorists bound for Scotland, the Border Country, the Lake District, and Norway. The illustration above shows the train in its new livery, approaching Kings Cross from Newcastle and Edinburgh.

Japanese monorail. The first supported monorail to be built in Japan has been completed at the Fuchu works of the Tokyo Shibaura Electric Company. It consists of a 3-car unit operated by one conductor. It is 100 ft. long and has a safe maximum speed of 25 m.p.h. The cost was £50,000.

Licensing Authorities' annual report. The annual reports of the Licensing Authorities covering the period October 1, 1959, to September 30, 1960, have been published and are available from H.M. Stationery Office, price 5s. net.

Machine tools at Brussels. Examples of horizontal-boring machines, manufactured by H. W. Kearns & Co. Ltd., are to be exhibited at the 7th European Machine Tool Exhibition. The exhibition is due to be held at the Palais du Centenaire, Brussels, from September 3-12.

C.N.R. incentive freight rates. The Canadian National Railway is to introduce incentive rates for less-than-full wagon load freight in Ontario and Quebec on July 31. The rates will provide successively decreasing charges on increasing sizes of consignments and is designed to provide a competitive service between principal points in the central provinces.

Glacier Metal New Zealand subsidiary. The Glacier Metal Co. Ltd. is to form a subsidiary company in New Zealand to manufacture plain bearings. The initial capital will be of the order of £50,000 of which Glacier Metal Co. Ltd. will hold the major proportion and New Zealand interests the remainder. Production is expected to commence in 9 or 12 months.

Waterloo Road to be widened. The Minister of Transport has approved a grant of £95,123 towards the London County Council's scheme to widen Waterloo Road, London, between Lower Marsh and Morley Street, Lambeth, at an estimated total cost of £126,830.

Reconstruction at London Bridge Station. Messrs. T. B. Bennett & Son, Architects, have submitted to the London County Council on behalf of the Southern Region of British Railways a scheme for the redevelopment of the site of the war-damaged office block on the Central section side of London Bridge Station. The proposed development entails the erection of an office building in the form of a 210-ft. tower block with a four-storey wing and shops at ground level. Improved station facilities, and parcels and booking offices are included as well as the re-erection of the station forecourt.

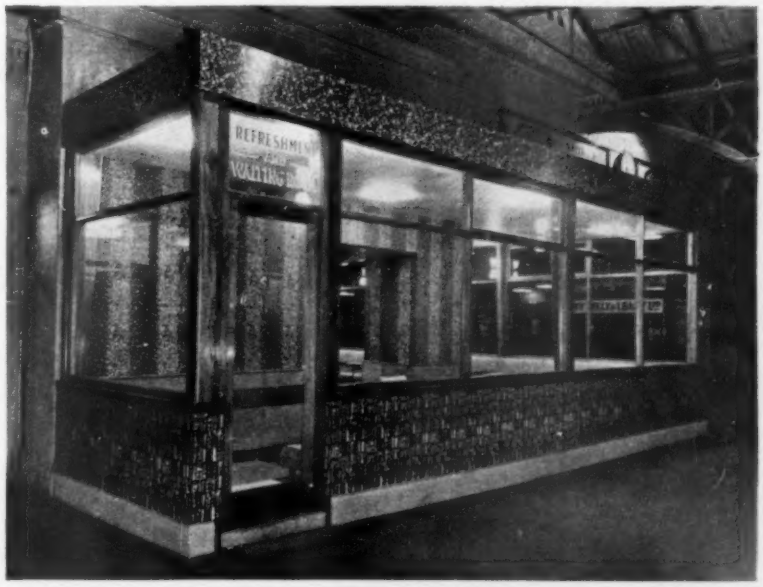
Acquisition by Allen West & Co. Ltd. Allen West & Co. Ltd. have acquired the manufacturing interests of the Digital Engineering Co. Ltd. Dr. L. N. Bramley continues as Managing Director and Mr. W. N. Jenkins is retained as consultant.

Vee-form diesel engine. The National Gas & Oil Engine Company has developed a vee-form version of its "F" series of diesel engines. This will extend the range to 3,100 b.h.p. in 16-cylinder form suitable for continuous industrial operation at 600 r.p.m.

Special train for Papal Legate. The Coras Iompair Eireann ran a special train from Dublin to Cork and back for the Papal Legate to the Patrician Congress, His Eminence Cardinal Agagianian. The Cardinal travelled in the state coach of the former Great Southern & Western Railway, built in 1902 and overhauled for the occasion.

C.P.R. credit cards. The Canadian Pacific Railway has introduced a credit card to cover both air and sea travel available for its airline, steamship, hotel, and telegraph services. It will also be honoured by Western Union offices in the United States of America, by Hertz offices for car rental charges, and accepted by Canadian Pacific appointed travel agents and general agencies anywhere in the world.

Station restaurant in Ulster. A restaurant and bar has been opened by the Ulster Transport Authority at Great Victoria Street, Station, Belfast. Designed by the Architect's Department of the U.T.A. and executed by the Authority's Works Department, the outside walls are panelled to dado height with Alexandretta pattern Warerite. Above the glass windows lining the two main sides of the premises, Murano pattern Warerite



Restaurant and bar recently opened at Great Victoria Street Station, Belfast

has been used. Within, all tables have been surfaced with Goldust pattern Warerite on red and yellow backgrounds.

Marton Goods Depot closure. Marton Goods Depot, between Leamington Spa and Rugby, on the London Midland Region of British Railways, was closed for all traffic on July 3.

Shustoke Goods Depot to close. Shustoke Goods Depot, between Whitacre and Nuneaton, on the London Midland Region of British Railways, will be closed on July 24 for all traffic except that dealt with at private sidings.

Unpainted bus for London Transport. The London Transport Executive is to run an unpainted aluminium bus in London as an experiment to establish wear, maintenance cost, and appearance compared with the present painted aluminium buses.

Isle of Wight ferry. A new vessel, the *Fishbourne*, was brought into the Portsmouth-Fishbourne car-ferry route of the Southern Region of British Railways on July 7. A sister ship, the *Camber Queen* is nearing completion. These vessels will make the crossing in 35 minutes as against the present time of one hour, and they are twice the size of the present ships.

"No Passport" Excursions. The Great Northern Line of British Railways, Eastern Region is to re-introduce "No Passport" day excursions to Paris. The facility will operate from July 13 to September 14, and passengers may travel on the outward journey on Monday, Tuesday, Wednesday or Thursday, returning from Paris the following evening. The return fare second class will be 121s. from Lincoln and 126s. from Doncaster, with reduced rates for children.

Railway Stock Market

Markets are likely to remain uncertain until the Chancellor's plans to help the economic position are known. These are expected to include a 10 per cent increase in purchase tax and excise duties. Further measures, including perhaps a higher Bank rate, are considered inevitable, though a payroll tax is unlikely.

Foreign rails showed small losses where changed. Absence of demand, for instance, put Antofagasta ordinary stock back to 17¼, compared with 18 a week ago, though the preference stock kept at 34. United of Havana second income stock kept at 6, and San Paulo Railway 3s. units were again quoted at 1s. 11¾d. Mexican Central "A" bearer debentures remained at 59.

Costa Rica ordinary stock was 41½ with the 6½ per cent first mortgage debentures 96½xd, but Chilean Northern 5 per cent first mortgage debentures lost a point at 50xd. Brazil Railway bonds were 3¼, Guayaquil & Quito assented bonds 58½xd, while Paraguay Central prior debentures changed hands at 18¼. International of Central America common shares were $19½ and the preferred stock $103¼.

Canadian Pacifics rallied in balance from $45¼ to $46½, but both the 4 per cent preference stock and debentures were affected by the trend in sterling securities, the former having receded on balance from 56¼ to 55¼, while the latter were 53¼ compared with 53½ a week ago. White Pass shares eased from $11½ to $11¼.

Elsewhere Nyasaland Railways shares have reacted from 11s. to 9s. 6d.: the 3½ per cent debentures remained at 32. West of India Portuguese capital stock marked 115½ and Barsi Light Railway stock again had a quotation of 17. Midland Railway of Western Australia £1 units of second debentures changed hands around 11s. 4½d.

Among shares of locomotive building, engineering and kindred companies, lower prices ruled owing to the trend in stock markets, and Birmingham Wagon, for instance, came back further to 22s. 9d., compared with 24s. 3d. a week ago. North British Locomotive have fallen from 6s. 1½d. to 4s., while Beyer Peacock eased afresh from 7s. 9d. to 7s. 3d. Charles Roberts 5s. shares came back from 7s. to 6s. 9d.

Wagon Repairs 5s. shares held the rise to 22s. which followed the results, but Gloucester Wagon 10s. shares have firmed up from 8s. 6d. to 8s. 9d. G. D. Peters were at the slightly lower level of 19s. 4½d. recorded a week ago, and in other directions, Westinghouse Brake came down to 37s. 3d. compared with 39s. 3d. a week ago.

Among electricals, A.E.I. at 38s. 6d. compared with 39s. 9d. a week ago, G.E.C. declined from 33s. 6d. to 32s. 3d. and English Electric from 33s. 9d. to 32s. B.I.C.C. after easing, showed a small rally to 57s. 3d., Mather & Platt were 39s. 9d. at which there is a yield of over 5½ per cent, and, elsewhere, Ruston & Hornsby came back from 27s. to 25s. 6d. despite the maintained 9 per cent dividend, though the year's profits show a reduction. Vickers receded from 32s. 6d. to 31s. 3d. and T. W. Ward from 76s. 6d. a week ago to 74s. 6d. Steel shares lost ground with Colvilles down to 56s. 9d., 9d. below the price at which the new shares are being offered to shareholders. In other directions, Stone-Platt at 53s. 6d. lost 2s. on balance and now yield nearly 6 per cent on last year's 16 per cent dividend.

Ransome & Marles 5s. shares were 15s. 10½d. following full details of the rights issue. Pollard Bearing 4s. shares rallied from 36s. 3d. to 37s. 3d. Leyland Motors were little changed on balance at 93s. Pressed Steel 5s. shares at 20s. 7½d. compared with 22s. a week ago, and Dowty Group 10s. shares came back from 35s. 4½d. to 34s. 1½d.

Forthcoming Meetings

July 15 (*Sat.*). The Permanent Way Institution, East Anglia Section. Visit to remodelling of Colchester North Station.

July 16 (*Sun.*). The Stephenson Locomotive Society. Special train to Annesley, Staveley (G.C.), and Mexborough Sheds, and Doncaster Works and Sheds from Birmingham, New Street.

July 16–17 (*Sun.-Mon.*). Railway Canal & Historical Society. 200th Anniversary of opening of Bridgewater Canal.

July 20 (*Thu.*). The Model Railway Club, at Keen House, Calshot Street, N.1, at 7.45 p.m. "R. W. Urie and his Locomotives," by Mr. T. C. Britten.

July 22 (*Sat.*). Railway Canal & Historical Society, West Midlands group. Visit to Coalbrookdale area.

July 23 (*Sun.*). The Railway Enthusiasts' Club, North Lincolnshire area tour from Doncaster.

July 29 (*Sat.*). The Permanent Way Institution, London Section. Visit to Colchester Station reconstruction and Harwich Ferry terminus.

Sept. 2 (*Sat.*). Permanent Way Institution, London Section. Visit to Southampton Docks.

OFFICIAL NOTICES

PART or full time occupation sought by retired executive. Technical or clerical. Considerable knowledge of railways. Box 198, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

THE Proprietors of British Patent No. 680,644 relating to Improved Railway track sleeper tamping machines, are willing to grant licences for the commercial exploitation of the invention in the United Kingdom. LLOYD WISE, BOULY & HAIG, 10, New Court, Lincoln's Inn, London, W.C.2.

ELECTRICAL ENGINEERS

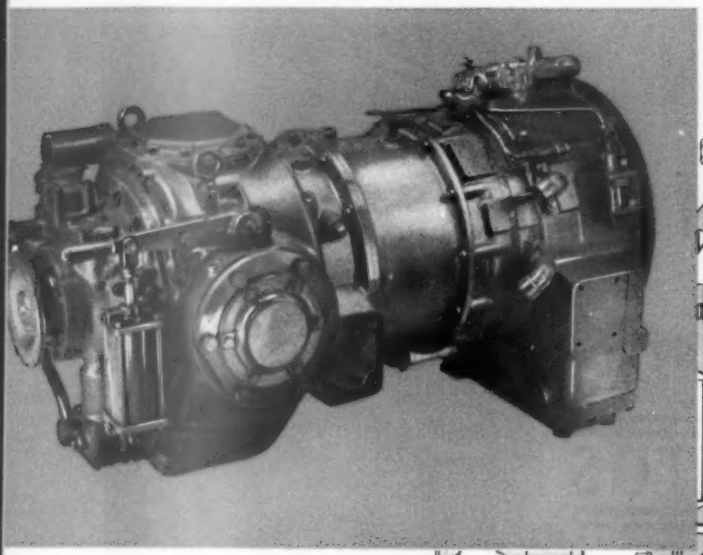
BRITISH RAILWAYS ELECTRIFICATION

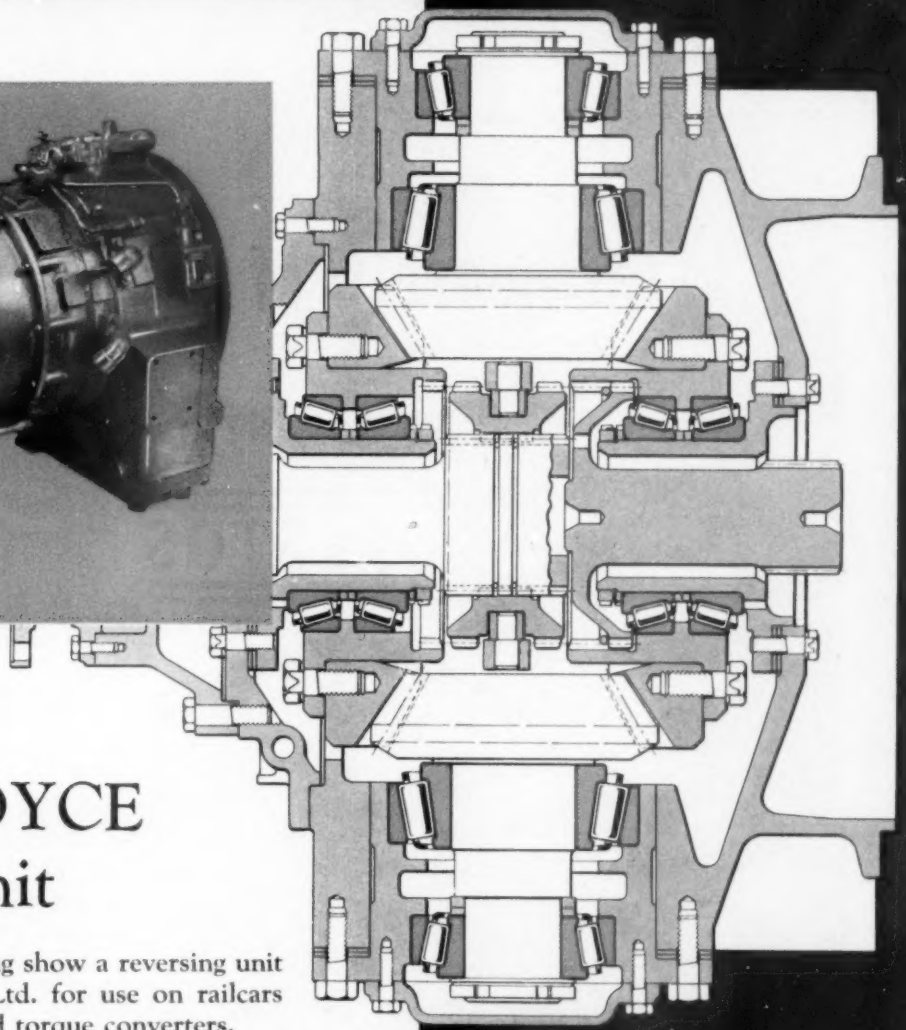
THE British Transport Commission are seeking Electrical Engineers interested in the 50-cycle system adopted for the overhead system of electrification for British Railways and invite applications for the following posts in the department of the Chief Electrical Engineer in London :—

Post No.

1. Chartered Engineer for the post of Electrical Engineer (Development). Previous railway or traction experience an asset, but not essential. Candidates must be interested in electrification on the new standard system and have the personality, ability and initiative to succeed. The selected candidate is assured of support from the engineering staff of the Department and from a Research Section working in parallel.
   Commencing salary according to qualifications and experience but will exceed £3,000 a year and there are good prospects of further advancement to a post of the highest responsibility for the design of electrical equipment for rolling stock and fixed installations.
2. Chartered electrical engineer with experience in the application of modern instrumentation and electronic techniques. Ability to organise the carrying out and co-ordination of the results of system tests on 25/6.25 kV railway traction. Also deal with telecommunication interference problems and other liaison duties.
   Salary range : £1,800/£2,120.
3. Chartered electrical engineer experienced in the design, manufacture and/or maintenance of electric rolling stock. To prepare specifications and supervise design and technical management of contracts for electrical equipments for electric and diesel-electric locomotives and for multiple-unit trains.
   Salary range : £1,800/£2,120.
4. Electrical or mechanical engineer experienced in design, manufacture and/or maintenance of electric rolling stock. To assist in preparation of specifications, supervision of design and technical management of contracts for electrical equipments of multiple-units. Corporate membership of the Institution of Electrical or Mechanical Engineers desirable.
   Salary range: £1,350/£1,560.
5. Engineer to assist in the specification and design of the overhead line contact system for railway electrification. Experience in design and/or installation of the catenary system desirable. Membership of a recognised professional Institution desirable.
   Salary range: £1,175/£1,290.
6. Engineer to assist in organising and co-ordinating the results of system tests on 25/6.25 kV railway traction, and on interference problems. Experience in the application of modern instrumentation and electronic techniques useful. Membership of a recognised professional Institution desirable.
   Salary range: £1,070/£1,145

Superannuation scheme, certain travel facilities, medical examination. Applications quoting Post Reference and stating age, qualifications and experience to the Director of Establishment, British Transport Commission (Dept. R.G.), 222, Marylebone Road, London, N.W.1, within 14 days.





In the ROLLS-ROYCE reversing unit

The photograph and drawing show a reversing unit produced by Rolls-Royce Ltd. for use on railcars with their diesel engines and torque converters.

Air-operated dog-clutches engage either the direct drive, or the reverse through the spiral bevels: a toggle device ensures the avoidance of neutral unless deliberately engaged.

The design is of particular interest in showing many space-saving features, and the Timken bearings—with their high capacity for radial and thrust—also play their part in contributing to the compactness of the unit.

The mesh of the bevels is controlled during assembly by the use of selected washers, without disturbing adjustment of the bearings.

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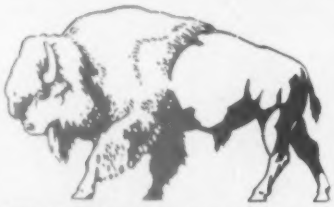

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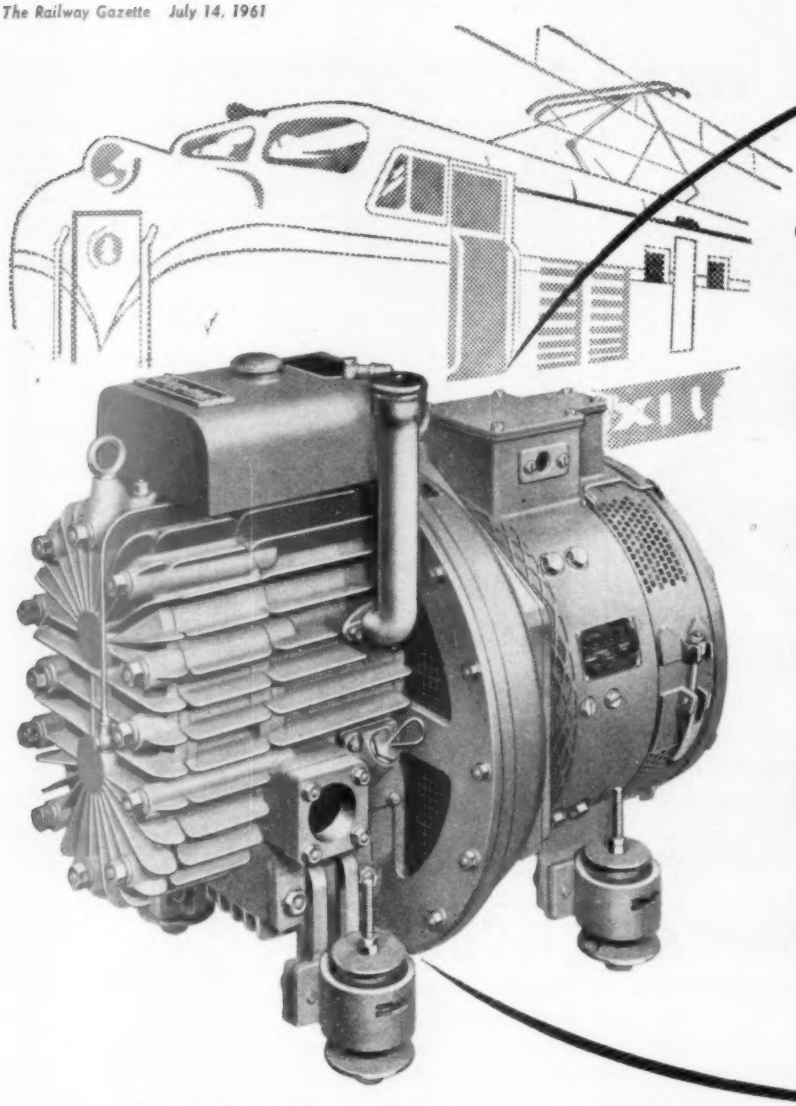

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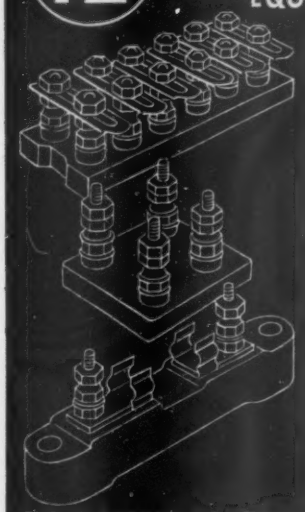

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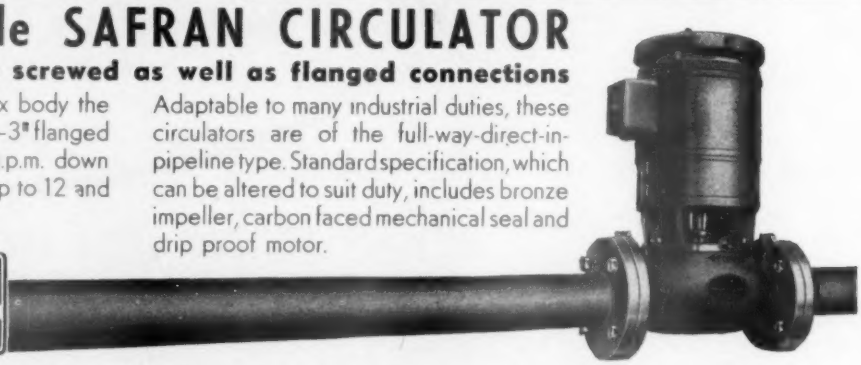

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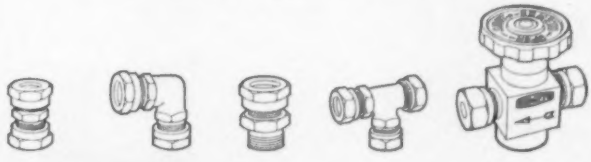

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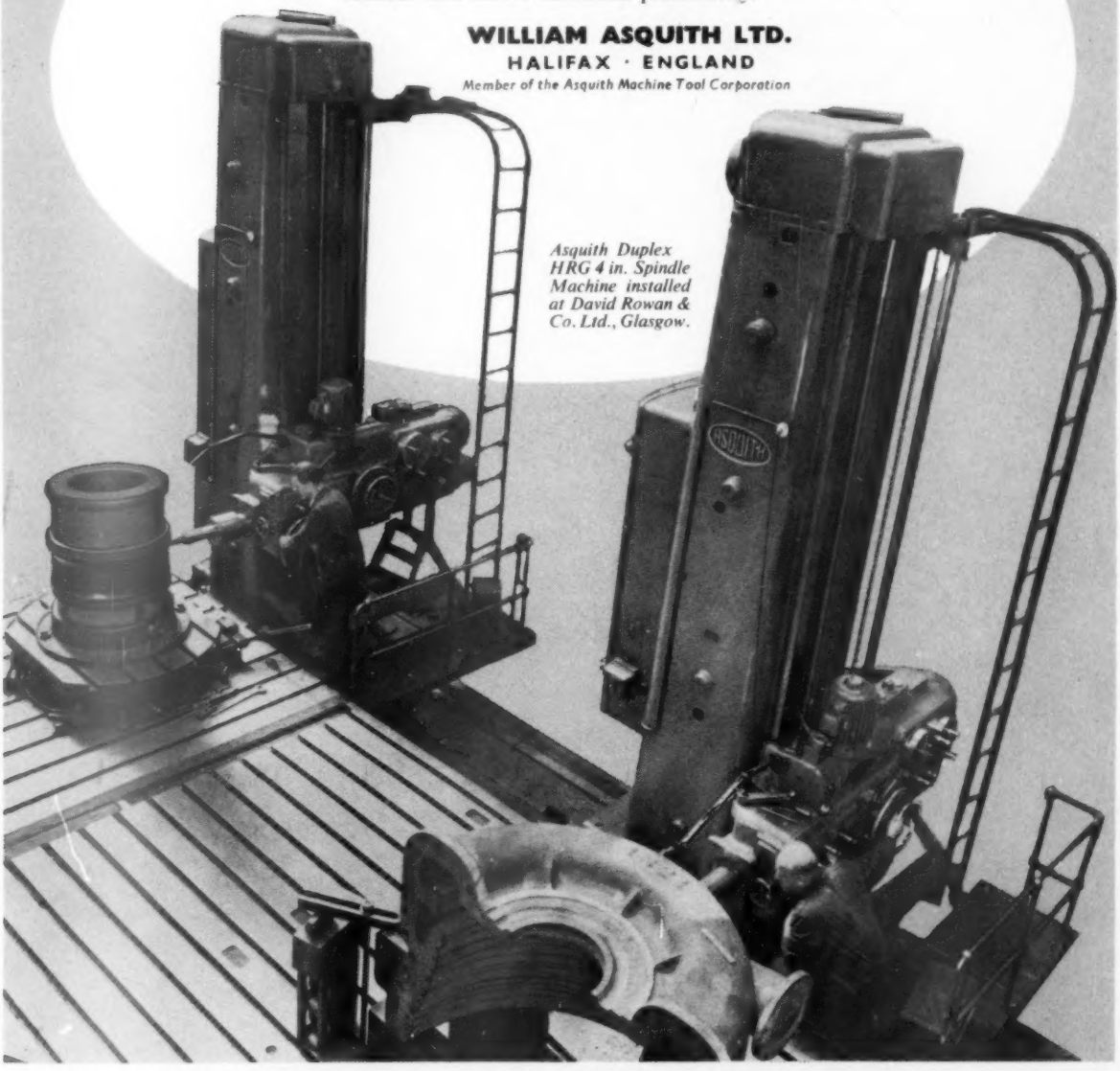

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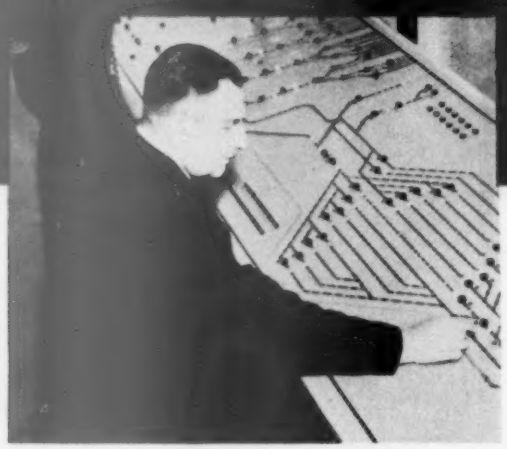

AEI-GRS Equipment at Margam, British Railways, Western Region. (*Left*) Desk in control tower at Margam showing marshalling yard controls at left and Type NX Route Relay Interlocking controls (nearest camera). (*Right*) A 'cut' in a primary retarder. (Photographs by courtesy of British Railways)

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